

# AMERICAN ARTISAN

MARCH 1949

69th Year

RESIDENTIAL AIR CONDITIONING • WARM AIR HEATING • SHEET METAL CONTRACTING

## *In This Issue*

An attractive, modern showroom is vital to a progressive heating business. On Page 72 is an article which describes planning for modernization.

The "overtime on overtime" decision of the Supreme Court has caused much confusion. For its application in the building industry see Page 75.

Air distribution is an important element of Indoor Comfort. Securing the best results is discussed on Page 87.

A reader has suggested that shearing deductions for slip joints of round pipes should be standardized. A chart for this purpose appears on Page 104.

The Cover Picture of the Lumboody Institute has been chosen because it teaches practical subjects using the equipment of the industry. The photo is a good example. Page 83.





*Click!*

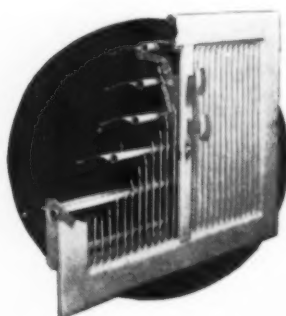
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IT'S SHUT!**



**Only AIR CONTROL Registers have *Push Button* Control!**

**IMAGINE! A REGISTER VALVE THAT OPERATES WITH A TOUCH OF THE FINGER—AS EASILY AS YOU TUNE YOUR PUSH BUTTON RADIO**

No wonder everyone is insisting on AIR CONTROL'S No. 10 Air Conditioning Registers — for only these registers have four-way adjustable air control, plus, the new modern PUSH BUTTON Control. These attractive push buttons are not only better looking — they give easy, trouble-free operation. There's no complicated mechanism to get out of adjustment, only four moving parts — and you **push** to open or close (there's no pulling or tugging to loosen screws and pull the register off the wall).



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AIR CONTROL Air Conditioning Registers and Grilles • Gravity Registers • Floor Registers and Faces • Ventilators also LEIGH Building Products.

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COOPERSVILLE MICHIGAN



With the amazing  
Wilson's Hair Filter  
**YOU GET THE  
CLEANING**  
without the  
**CLOGGING**

A longer free flow  
of cleaner air



Three factors are responsible for the rapidly increasing popularity of Wilson's *Hair* Filters. *First*—Natural hair, with its *natural* affinity for oil is a *natural* filtering medium. *Second*—Wilson's scientifically processed hair filtering medium catches and holds more dust. *Third*—in Wilson's *HAIR* Filters the trapped dust is collected throughout the entire filtering medium. It does not collect on and clog the inlet

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# AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING • WARM AIR HEATING • SHEET METAL CONTRACTING



Member—Audit Bureau of Circulations  
Member—Associated Business Papers



Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

## EDITOR

JOHN E. PETERSON

## ASSOCIATE EDITOR

JOHN McCULLOUGH

## ADVERTISING STAFF

WALLACE J. OSBORN  
New York City  
MURray Hill 9-8293

ROBERT A. JACK  
Cleveland  
YELLOWSTONE 1540

JAMES D. THOMAS  
GEORGE C. CUTLER  
Chicago  
STate 2-6916

R. PAYNE WETTSTEIN  
Los Angeles—DUNKirk 8-2286  
San Francisco—YUKon 6-2522  
Portland—ATwater 4107

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**MARCH, 1949**

*Volume 118, No. 3*

**AMERICAN ARTISAN, March, 1949**

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APPEARANCE  
LOW COST  
PERFORMANCE



**BEAUTIES**  
THAT MAKE FRIENDS  
FOR DEALERS . . .

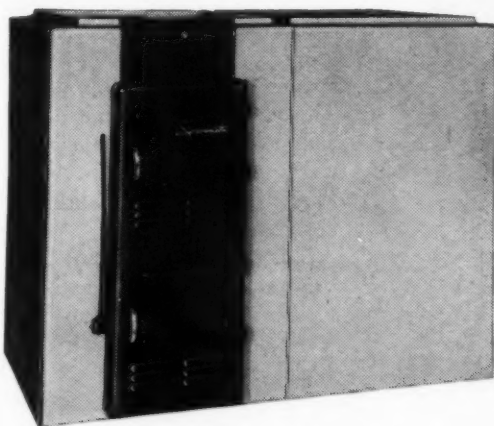
# SYNCROMATIC

Modern WARM-AIR FURNACES for  
**1 COAL 2 GAS 3 OIL** . . .

MODERN DESIGN . . . COUNTER-FLOW HEATING . . . EASE  
OF INSTALLATION . . . EFFICIENCY . . . LOW OPERATING  
COST . . . LONG-LIFE, MAKE SYNCROMATIC A FAVORITE

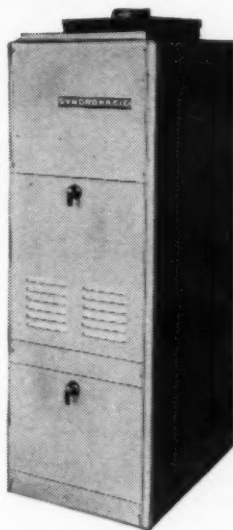
## CFB COAL FIRED UNIT

Only Syncromatic has this design . . . the result of intelligent and logical application of the "COUNTER-FLOW" principle and a completely and unparalleled Front construction . . . GROUND FIT DOORS COMBINED WITH VENTILATED STEEL CABINET SHIELD. The only coal unit made that can be converted to high efficiency oil firing.



## GFB GAS FIRED UNIT

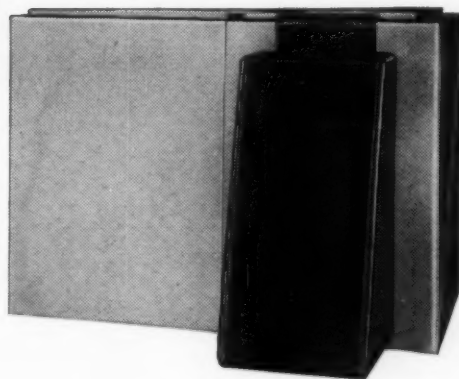
A complete range from 75,000 to 240,000 BTU. All heat exchangers built of heavy 10 gauge corrosion resisting steel. "COUNTER-FLOW" principle as used in all Syncromatic Furnace Units.



COUNTER FLOW PRINCIPLE  
MEANS PERFECTION IN  
HEATING EFFICIENCY

## OFB OIL FIRED UNIT

The Syncromatic Oil Fired Unit employs the "COUNTER-FLOW" principle in warm air heating . . . one of the most efficient methods of heat transfer known. Compact and completely welded heavy gauge heat exchanger . . . your best insurance for safety and long life. Just compare the gauge and construction of Syncromatic with any other oil-fired unit.



*Syncromatic Corporation*  
WATERTOWN, WISCONSIN



*the editor's notebook*

#### Slide Films . . .

On page 4 of the January Directory and Show Number I note an item concerning the 1949 Indoor Comfort Conferences of the National Warm Air Heating and Air Conditioning Association. In it you refer to two slide films entitled "A Course at Comfort College" and "It's Comfort They Bought."

Can you advise me where these films can be obtained and at what cost? As you know, we manufacture warm air heating equipment and my particular assignment happens to be sales promotion. It occurred to me that the information and subject of these films might lend themselves to our Payne Furnace Co.

A. J. HORN

Payne Furnace Co.  
Beverly Hills, Calif.

#### . . . Available

"With competitive selling fast returning to American industry, two slide films produced by the National Warm Air Heating and Air Conditioning Association are being offered for use by the warm air heating industry as an additional sales aid," announces George Boeddener, secretary-treasurer of the association.

The films titled "It's Comfort They Bought" and "A Course at Comfort College" are available to manufacturers, jobbers and dealers of warm air heating equipment for use in instructing employees about the seven steps to indoor comfort and Continuous Air Circulation. There is no charge for the use of these films.

"A Course at Comfort College" deals with a heating service mechanic who knocks him-

# There is "VITROLINER" BUSINESS IN YOUR CITY!

## ATTENTION Sheet Metal Men

There is a steady demand for VITROLINER CHIMNEY LINERS in every city of the U. S. and Canada. Every home is a prospect, especially where oil or gas is used in the heating plant. If your organization is aggressive and reliable, you can establish a profitable year 'round business in your community.

Our Distributors can supply VITROLINER in quantity quickly and efficiently. We show you how to build a money making business—how to cash in on the tremendous demand for quality VITROLINER CHIMNEY LINERS.

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- CREATES BETTER DRAFT
- REDUCES FUEL CONSUMPTION
- PREVENTS CONDENSATION DAMAGE
- ASSURES LONGER LIFE

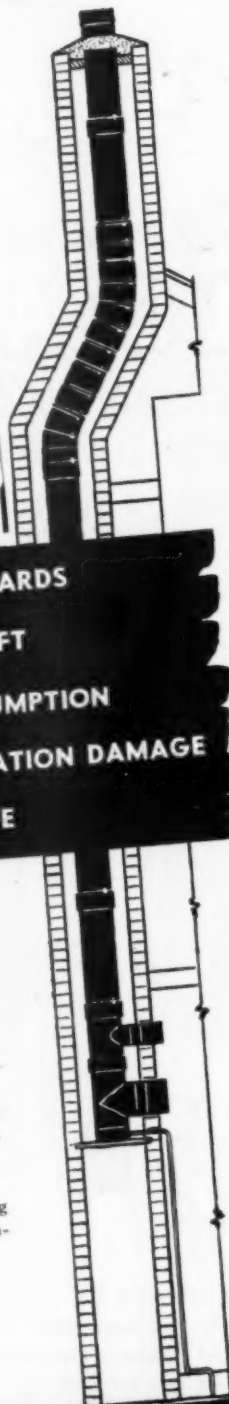
VITROLINER, a pioneer product, protects and preserves the chimney from the harmful and destructive properties of combustion. Manufactured from heavy-gauge iron, coated with acid-resisting vitreous enamel.

The actual installation is easy and takes only a few hours for experienced sheet metal men.

Recommended by many leading gas companies, coal and oil burning equipment manufacturers.

- ECONOMICAL
- DURABLE AND PRACTICAL
- UNDERWRITERS' APPROVED

FOR FURTHER INFORMATION WRITE TO  
**CONDENSATION ENGINEERING CORPORATION**  
122 SO. MICHIGAN AVE. CHICAGO 3, ILL.



*the editor's notebook*

self out by banging his head on an old furnace door. He imagines himself at a college, called Comfort College, where he is guided on a tour of modern warm air installations by Horatio Oliver Thompson, professor of indoor comfort. On this tour the Professor points out the advantages of the seven steps to indoor comfort. Humor is injected throughout the film giving added interest.

"It's Comfort They Bought" deals with the subject of Continuous Air Circulation. Walt, a warm air heating dealer member of the national association, with Elmer, his mechanic, are called by Mrs. Green who is not satisfied with the heating system of her house. The film follows Walt and Elmer through the various simple operations that go into making a CAC adjustment. The film ends with the satisfied Mrs. Green plugging CAC to her friends, with Walt getting the additional business.

The slide films (35mm) and transcriptions are designed for use on a sound-slide projector with a turntable revolving at 33 1/3 rpm.

Inquiries regarding the use of these films may be addressed to the National Warm Air Heating and Air Conditioning Association, 145 Public Square, Cleveland 14, Ohio.

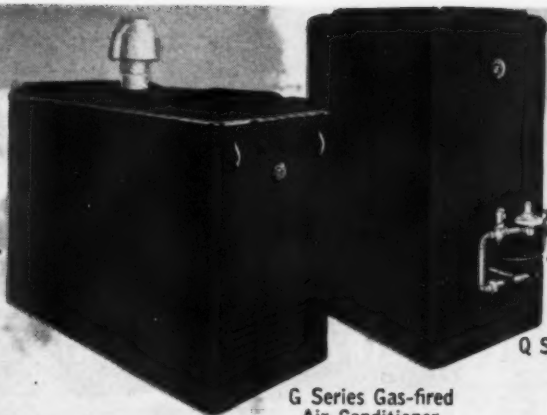
#### Our February Editorial

Your February editorial on continuous air circulation is timely . . .

When fans were first applied to furnaces they were generally inadequate . . . Later, after most manufacturers furnished adequate fans, many installers believed it necessary to



M Series Hi-Boy  
Gas-fired



G Series Gas-fired  
Air Conditioner

Q Series Gravity  
Gas-fired

GAS

Marvellaire

OIL



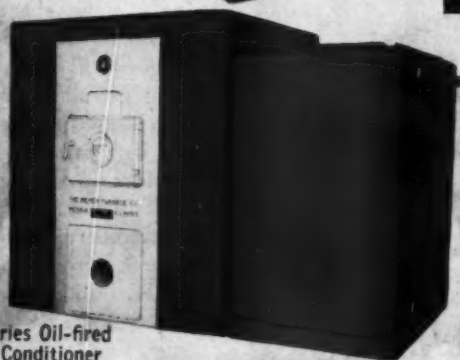
D Series Hi-Boy  
Vaporizing Oil-fired



B Series Hi-Boy  
Pressure Oil-fired



E Series Oil-fired  
Air Conditioner



K Series Oil-fired  
Air Conditioner

## MODERN HEAT

*for modern homes*

More to sell with *Marvellaire*

Now you can sell traditional WEIR-MEYER quality with important new advantages in performance, economy, and ease of operation. You'll quickly recognize that only Marvellaire offers so many completely new advantages — for all fuels — plus easier installation, lower inventory, and assured profits for you. If you want to build a permanent profitable business, under a valuable protected franchise, write for full information on Marvellaire. You may be in "open" territory.

THE MEYER FURNACE CO.  
Manufacturers of Weir-Meyer Furnaces & Air Conditioners for Gas, Oil & Coal.  
Foundries: Peoria and Peru, Illinois • General Offices: Peoria, Illinois

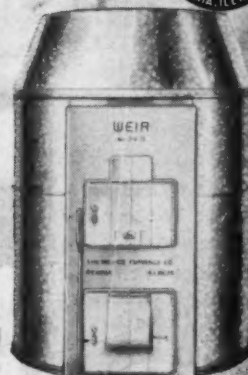
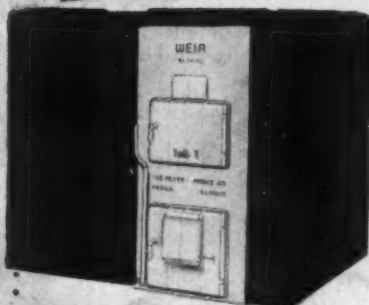
Since 1866



COAL

UC Series Coal-fired  
Air Conditioner

U Series Coal-fired  
Gravity Furnace



*the editor's notebook*

run the fan at top speed. CAC has helped this situation.

Today, however, there are still too many contractors who are not well acquainted with CAC. All contractors owe it to their customers and to themselves to know CAC . . . No contractor is deriving all the benefits that warm air heating offers if he is not actively promoting CAC.

FRANK L. MEYER

President  
Meyer Furnace Co.  
Peoria, Ill.

We all know . . . where an excessive quantity of air is circulated, drafts become a serious threat to comfort. Winter air conditioning systems should be designed for a supply air temperature of 150 F, about the same as a gravity system.

If a system is designed correctly, the problem of drafts is a problem of air distribution. The fault does not lie in the system but how the air is distributed.

Air circulation is not a stigma, is not detrimental to human comfort, and is not to be avoided but there is a limit to the air motion human beings can stand.

JAMES J. LASALVIA  
University Heights, Ohio.

An article on air distribution, contributed by Mr. La-Salvia appears in this issue.—ED.

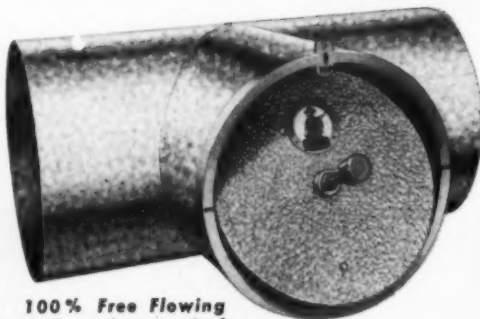
Your editorial comments recall the relative importance of equipment, duct design, and adjustment that has been impressed upon me by my research experience.

Here is a house in which is a carefully engineered furnace, blower, controls, and other equipment. The duct design

# Sentry-

## FUEL AND HEAT CONTROLS

### SENTRY DRAFT REGULATORS



100% Free Flowing  
draft—when required

All unnecessary working parts have been eliminated in this new economical and efficient draft control. Baffle plate and mounting ring are of durable light weight aluminum—bearings and pivots of non-corrosive brass. This permits free, automatic operating action and feather-light sensitivity to the slightest air currents at all times—as well as assurance of long life. Pre-setting balance is carefully factory adjusted. Sentry regulators are available in sizes from 4" through 10" in diameter for horizontal or vertical pipe installations.

### AT-A-GLANCE TANK GAUGES

The outstanding gauge in the field, it was chosen for nearly 50% of the installations made in 1945-46. Clear visibility with accurate, easy reading from all directions is only one of its many features. In addition, simplified mechanism eliminates intricate working parts such as gears, cams, springs or magnets which often cause trouble and wear out. Fully approved and listed as standard by the Underwriters' Laboratories, Sentry at-a-glance gauges are durably built, guaranteed leak-proof and will withstand filling pressure of more than 50 lbs. per sq. inch. Installation is quick and easy—even when a tank is partially filled. Sentry gauges are factory designed and constructed to fit all tank sizes and shapes, including barrels and drums.



Write for fully  
illustrated brochure.



**KRUEGER Sentry PRODUCTS**  
GREEN BAY • WISCONSIN

*the editor's notebook*

and installations are good, and yet the performance is not satisfactory.

Here is the same house with the same equipment and the same distribution system, and the performance is tops. What is the difference? No changes were made in the equipment or the house or the owners. The only changes were small adjustments in blower speeds and control settings. It's the tune-up operation that changed the results from fair to excellent.

Every central heating system is a "tailor-made" installation, and that final adjustment makes all the difference between mediocre and excellent performance. The industry needs a continual emphasis on that final adjustment.

S. KONZO

Urbana, Ill.

### Acute Housing Problem Over?

It is anticipated by forecasters both in government and in industry that there will be some falling off of residential building this year.

This means that as the construction industry moves into a buyer's market, as it will during the year, it must pay more attention to the selective nature of the market.

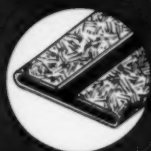
It also means that profit margins will be reduced and more attention will be given to effecting economies in building methods and increased productivity from labor.

Builders will be encouraged to take advantage of new methods of construction which will reduce costs so adequate houses may be built for prices that range well under \$10,000, including the land.

Housing research is looking for new and better methods at less cost. This does not mean



## THE CLEATFORMER



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LOCK CLEAT

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THAT'S SETTING NEW RECORDS  
IN PROFIT MAKING! ➤

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# THE LOCKFORMER CO.

4615 W. ROOSEVELT ROAD

• CHICAGO 50, ILLINOIS

## the editor's notebook

the omission of essential equipment or the substitution of inferior materials. It means finding new ways or new designs that take less material and less labor, and yet do as good a job, or better.

### Chimney Cap Dimensions

We are in need of a chart that lists the correct dimensions of chimney caps. For example, what should the diameter of the cap be for an 8 in. roof jack to look proper? What distance should be allowed between the cap and the pipe? We need this information for ventilators and roof jacks from 5 to 36 in. diameter.

Is there a formula that gives these dimensions for all sizes?

RALPH J. BURR

Standish, Mich.

We are publishing this letter hoping some reader can supply the information, as it cannot be found in sheet metal textbooks.—ED.

### Floor Panel Heating

We have a customer who is interested in a warm air panel system in the floor. He also feels he would like to return the air through the rooms, possibly from one central intake.

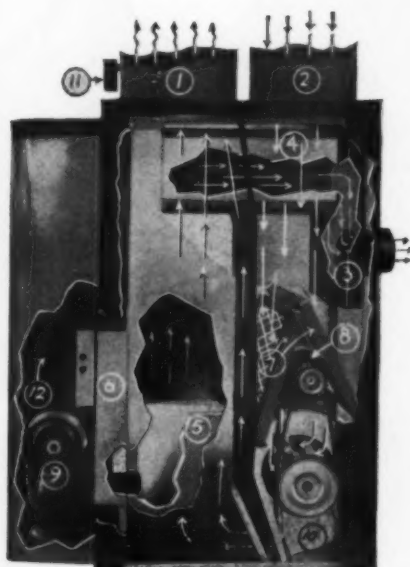
He is somewhat concerned about the temperature he can expect on the floor and at the ceiling and his greatest concern is about the possibility of drafts.

He is going to locate his heating equipment in a basement which, it is our experience, is a distinct advantage over a utility room installation.

We have designed such a system in a home we are building for ourselves and realize there is some experimentation involved. Obviously, this cus-



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**5 Sizes Counter-Flo Basement Type**  
66,000 to 200,000 Btu.

**2 Sizes Utility Type Hi-Boys**  
85,000 and 100,000 Btu.

**One Gravity Furnace—76,500 Btu.**

**A SIZE and TYPE for EACH HOME**  
**NATION-WIDE DISTRIBUTION**

Write—

**J. V. PATTEN COMPANY**

Sycamore, Illinois

## the editor's notebook

tomor wants some assurance from a manufacturer or contractor who has had experience with this type of installation. Preferably, he would like to see such an installation and talk to a satisfied owner.

Can you help us in this matter?

ROBERT W. DRING

R. W. Dring & Son  
La Porte, Ind.

A reprint of a number of articles on warm air panel heating is available from our Circulation Department. Several methods of applying warm air panel heating to floors are described. Ask for Warm Air Panel Heating.—ED.

### Competition in Engineering

A survey by the Veterans Administration shows that engineering graduates generally will find stiffer competition for jobs in the future. Over 35,000 engineers are expected to graduate in 1949 and close to 50,000 will receive bachelors' degrees in 1950.

This tremendous volume of young engineers is many times the 7,000 or so needed to replace the older engineers who are dropping out of the profession annually.

### 30 States Supply Steel

The map of the steel industry, like a map of world events, has changed, developed, and expanded in recent years. The industry's mills and furnaces are now spread over 30 states against 27 states in 1938. More than 400 plants, making or finishing iron or steel in 250 communities, are scattered through those 30 states, which have 85 per cent of the nation's population. This takes no account

When jobs must go fast

# Call Wolff Metal Service

a warehouse organization

alert to your requirements in

When work comes up that finds you short of what you need, that's the very best time to call Wolff Metal Service . . . for Wolff is geared to be responsive to the urgency that moves you. Here is a warehouse group that is alive, elastic and full of bounce; an organization that has plenty of system but no red tape; one that has been trained to regard "routine work" as the fastest route an order can take to reach your unloading dock.

If you're the type who likes to work with people who roll up their sleeves to get a better grip on their job, and who can push when push is important, then Wolff Metal Service is for you . . . just as it is already the preferred warehouse for hundreds of midwestern buyers of industrial metals.



Chicago  
Republic 7-9100  
Milwaukee  
Daly 8-3832

Carbon  
Steels

Stainless  
Steels

Aluminum

Copper

Tin  
Plate

Metal  
Decorating



## BENJAMIN WOLFF AND COMPANY

General Office and Warehouse — 5800 South Seeley Ave., Chicago 36, Ill.

Wisconsin Office — 176 W. Wisconsin Ave., Milwaukee 3, Wis.



*the editor's notebook*

of the location of raw material operations or other facilities not directly engaged in production.

Ten years ago, Florida, Iowa and Utah were not on the steel map. The first two have now acquired finishing capacity without becoming steel ingot makers.

In 1938 the total number of plants in the country was only 360. In each of 27 states significant changes have taken place, which the bare outlines of the map cannot indicate.

California has become one of the first ten producing states. It is first in reinforcing bar capacity and makes seven products which it did not make in 1938. Texas is now the producer of a diversity of products. Indiana has become the state with the largest tin and terne plate capacity; Wisconsin is now second largest in electric weld pipe and tube capacity; Illinois has assumed the leadership in plain and galvanized wire capacity. Utah is in fourth place in plate capacity, exceeded by Pennsylvania, Indiana and Illinois. The new mills in Florida and Iowa are wire mills.

Pennsylvania is still the state with the largest capacities for pig iron, raw steel and total hot rolled products, and the leading producer of bars other than the concrete reinforcing type, plates, heavy structural shapes, wire rods.

Ohio, with the second largest hot rolled capacity in both 1938 and 1948, gained over 3 million tons, the largest increase made by any state in the interval. Ohio is the leading state in capacities for electric furnace steel, hot rolled sheet and strip, skelp, electric weld pipe and tubes, and cold rolled

## Nu-Way OIL BURNERS



**N**U-WAY's complete line of oil burners provides a real sales opportunity. The right burner for the job . . . and the job can be sold . . . the profit made. With sizes from  $\frac{3}{4}$  gal. per hour up to 20 gal. per hour, Nu-Way Oil Burners effectively handle a wide range of installations. And, Nu-Way's exclusive patented features are real sales getters. Only Nu-Way has positive Air Control and Shielded Nozzles for top efficiency and real economy. Nu-Way's shielded nozzle provides for burning a smaller quantity of fuel oil with increased efficiency . . . ideal for small homes.

Demand for Nu-Way Oil Burners is constantly being stimulated by a regular schedule of advertising in national home magazines. A whole array of local sales helps including mats, folders, booklets, displays, etc., are available to dealers handling Nu-Way equipment.

Get information on the profit line . . . Nu-Way Oil Burners. Write today.



THE **Nu-Way**  
CORPORATION

Rock Island, Illinois  
Serving Distributors, Furnace and  
Boiler Manufacturers

"Automatic Oil Heat Exclusively Since 1921"

*the editor's notebook*

sheet and strip steel.

Michigan out-gained other states in capacity added for the making of cold rolled sheet and strip steel in the ten-year interval. Michigan also became a producer of butt weld pipe.

During the ten-year interval, raw steel capacity of the country increased 17.5 per cent. Oregon, Tennessee and Utah are the newly listed producers of raw steel. Texas' capacity rose from 4,325 tons per year to 582,320 tons.

The rank of the twelve leading states in capacity for raw steel, blast furnace, and hot rolled output is as follows:

	Raw Steel Cap.	Blast Furnace Cap.	Hot Rolled Cap.
Pennsylvania .	1	1	1
Ohio . . . . .	2	2	2
Indiana . . . .	3	3	3
Illinois . . . .	4	4	4
Maryland . . .	5	7	5
New York . . .	6	5	6
Alabama . . . .	7	6	7
Michigan . . . .	8	8	8
West Virginia .	9	9	9
California . . .	10	—	10
Utah . . . . .	11	10	12
Colorado . . . .	12	11	11
Kentucky . . . .	—	12	—

Indiana is second to Ohio in capacity for hot rolled sheets and strip, having replaced Pennsylvania, which now ranks third.

After Ohio and Pennsylvania, Michigan has the third largest capacity for cold rolled sheets and strip, followed by West Virginia, Indiana, Illinois, New York, Connecticut, Maryland and Massachusetts.

Ohio's large gain in total hot rolled capacity was followed by Indiana, where 1,640,000 tons were added. Maryland, California, Alabama and Illinois each added more than 1 million tons.

# EVERY FORCED AIR SYSTEM NEW—OR NOW INSTALLED— NEEDS *The* **MASTER BLOWERTROL**

NOT JUST A *RUSH* OF HEAT

*It's ————— comfort  
Flowing In*



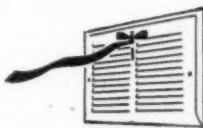
Cool air being gently expelled from ducts.



Now the warmer air starts coming.

## HOW IT WORKS—

It starts the blower motor at a plenum temperature of 100° and gradually increases the speed of the blower as the temperature rises until it reaches 125°. The blower operates at full speed until the plenum temperature drops below 125° at which point it gradually decreases speed as the plenum temperature drops.



The rooms need heat. Blower at full speed.



Thermostat satisfied — blower starts slowing down.



Everything comfortable—just a warm zephyr to keep it that way.

## WHAT IT DOES—

FOR YOUR CUSTOMERS—It gives them—at a cost within their reach—a control that will end chilly drafts, hot and cold layers of air, and “cold 70.” FOR YOU — It creates another satisfied customer.

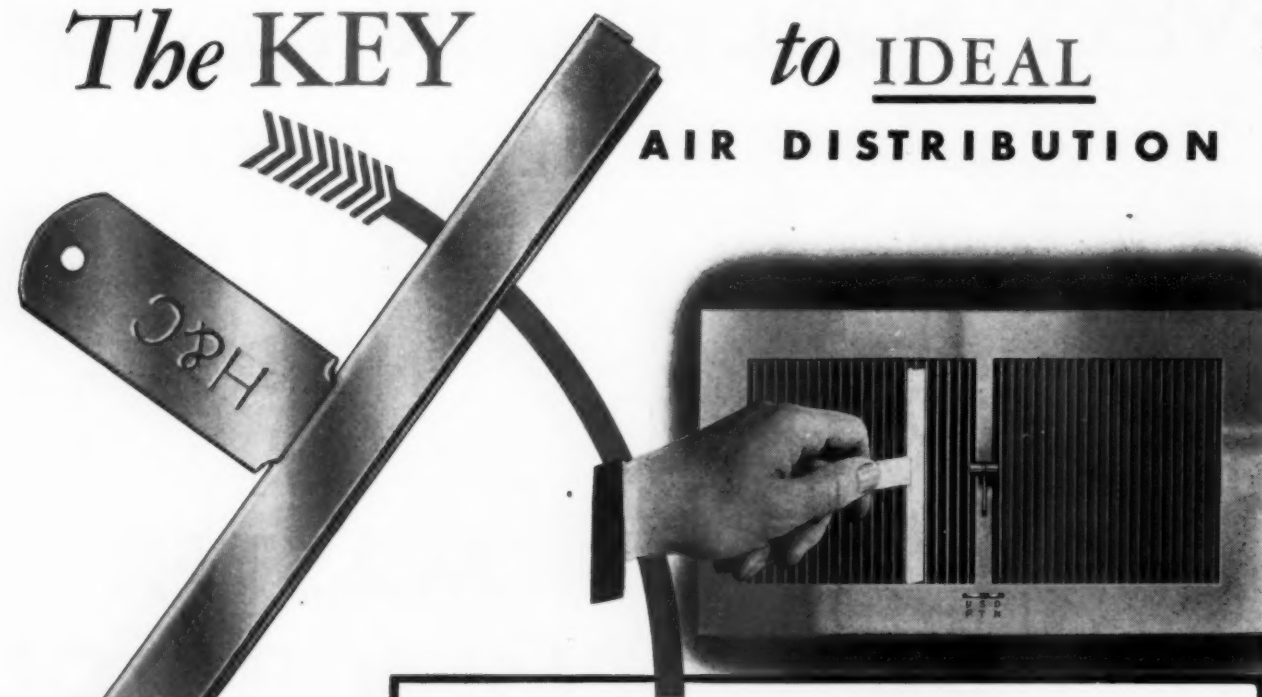
Every Master Blowertrol adds one more confirmed user of forced air heating to the ever-growing list.

WRITE FOR FULL INFORMATION

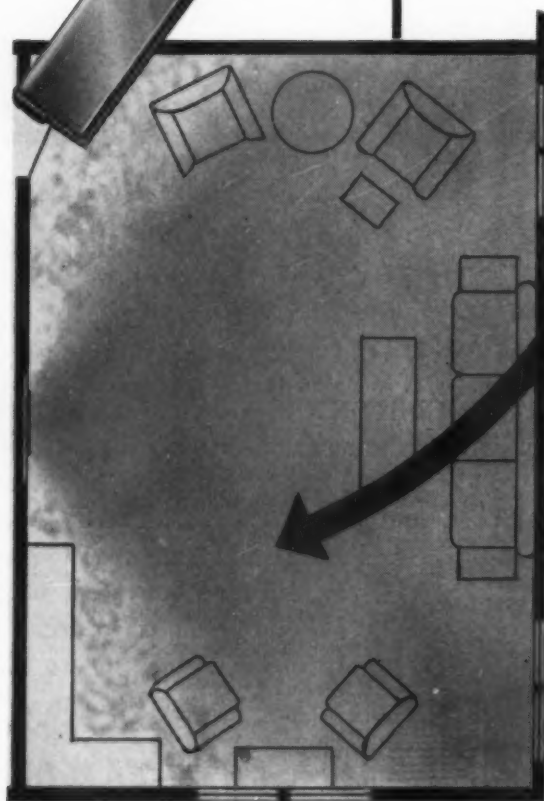
**THE WHITE MANUFACTURING CO.**  
2368 University Ave. Saint Paul, Minnesota

# The KEY

# to IDEAL AIR DISTRIBUTION

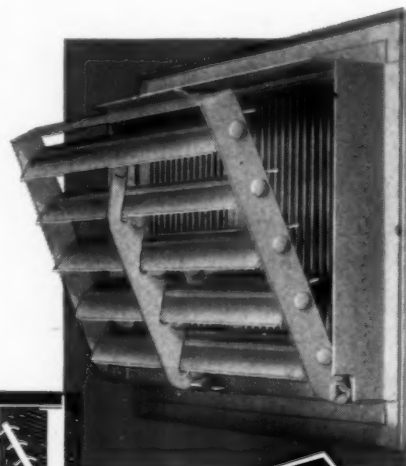


## DIFFUSION OBTAINED WITH THE H&C NO. 75 WHEN THE FINS ARE PROPERLY ADJUSTED



With the airflow in the duct smoothly and evenly distributed to all portions of the register face by the unique action of the incomparable H&C TURNING BLADE VALVE, all that is needed to provide ideal diffusion of the air to every part of the room is the simple, directional adjustment of the face fins. The secondary air motion that is set up as the air proceeds from the face, fills the near corners of the room and even temperatures are assured throughout.

## THE INCOMPARABLE TURNING BLADE VALVE



For air conditioning at its best use the H&C No. 75. It costs no more than the conventional multi-deflection register. Write for your copy of our '49 catalog if you do not have one. It contains the ideal register for every type of installation.

**HART & COOLEY MANUFACTURING CO. • Holland, Mich.**  
World's Largest Manufacturers of Registers, Grilles and Furnace Accessories

In Canada: Hart & Cooley Mfg. Co., Fort Erie, N. Ontario





## Every House Needs **COPPER** to cut Maintenance Costs

**T**HERE ARE mighty good reasons for using copper to flash a home. It takes just as much labor to install less permanent material. Hence, the intelligent home owner is quick to see the ultimate saving and extra security of copper. And quick to appreciate the service of the contractor who installs it.

On the job, copper is easy to work with. It's readily formed and soldered. It possesses adequate strength and toughness. Yes, there's extra satisfaction in doing any job the way you know it *should* be done.

**SPECIAL NOTES**—1. Standing seam entrance hoods give you a profitable source of extra business. 2. The concealed window flashing shown above is thin, electro-deposited copper bonded to building paper.

4807

ANACONDA  
COPPER MINING COMPANY  
**Anaconda**  
**SHEET COPPER**

**THE AMERICAN BRASS COMPANY**

General Offices: Waterbury 88, Connecticut  
Subsidiary of Anaconda Copper Mining Company

In Canada: ANACONDA AMERICAN BRASS LTD.,  
New Toronto, Ont.

# ANNOUNCING! THE NEW

## *Luxaire* PRESSURE

### Vaporizing Oil Fired Units



No. VA-65 Air Conditioning Unit, 75,100 Btu Output.



No. VH-75 Utility Unit, 75,100 Btu Output.



No. VG-61, Gravity Furnace, 69,000 Btu Output.

**Completely new**

**Competitively priced**

**Burn No. 3 fuel oil**



Tightening 4 screws, speedily mounts the completely assembled, factory adjusted burner in its correct position in the furnace.

The new 1949 line of Luxaire Pressure Vaporizing Oil Units are now ready! Ready for 1949 housing projects which are seeking automatic heating! Seeking good looking, high quality heating Units! Seeking low prices for the 1949 scale of housing costs! These sturdy units have heating elements of heavy No. 14 gauge steel. They have handsome cabinets, with gracefully rounded corners, attractively finished in baked enamel.

The unit itself is shipped assembled, to reduce installation costs, ready to have the burner installed.

The advanced Pressure Vaporizing burner is factory assembled and adjusted. It is quickly and easily installed in the unit, in its exact, correct position, by fastening it to the combustion chamber with 4 screws. For inspection or servicing, loosening the same 4 screws makes it possible to remove the oil burner bodily.

Approved by Underwriters' Laboratories to burn No. 3 fuel oil, it will give clean and efficient combustion with the lighter oils, as well.

See your Luxaire jobber for complete information.

THE C.A. OLSEN MANUFACTURING COMPANY

*Luxaire*



HEATING & AIR CONDITIONING UNITS

ELYRIA 12, OHIO

# TRY US FIRST

when you need  
Stainless Steel

**Are you looking for Stainless?** Then you'll be glad to learn that our stocks include: No. 2B Finish Sheets "par-excellence"; No. 4 Finish Sheets of uniform quality; bars meeting high standards of machinability; plates up to 120" wide and 360" long; welded and seamless tubing, pipe, angles, channels, welding electrodes in all standard grades and specifications.

Moreover, you can't beat U·S·S Stainless Steel for quality and proven excellence. And you'll get prompt, courteous service.

*Fill in and mail the coupon—now—for free booklets on U·S·S Stainless Steel.*

**TURN IN YOUR SCRAP** • The more scrap—the more steel



SYMBOL OF SERVICE

FOR STEEL USERS

United States Steel Supply Company  
Dept. J-39, 208 S. La Salle St., Chicago 4, Ill.  
Without obligation on our part, please send us free booklets  
on U·S·S Stainless Steel as checked below.

☐ Fabrication Book    ☐ Food Handling and Processing    ☐ Petroleum Industry

Name..... Title.....

Firm Name.....

Address.....

City..... Zone..... State.....

## UNITED STATES STEEL SUPPLY COMPANY

Warehouses: BALTIMORE • BOSTON • CHICAGO

CLEVELAND • LOS ANGELES • MILWAUKEE • MOLINE, ILL. • NEWARK • PITTSBURGH  
PORTLAND, ORE. • SAN FRANCISCO • SEATTLE • ST. LOUIS • TWIN CITY (ST. PAUL)

Also Sales Offices at: KANSAS CITY • PHILADELPHIA • TOLEDO • TULSA • YOUNGSTOWN

Headquarters Offices: 208 S. La Salle St.—Chicago 4, Ill.



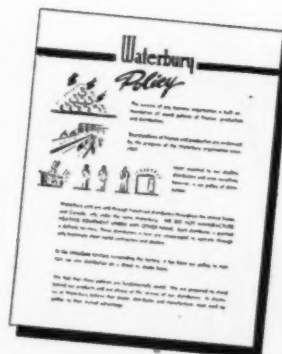
UNITED STATES STEEL



# Waterbury

## Has a Sound Dealer Policy

Waterbury believes that a clearly stated policy toward distributors and dealers that is strictly carried out is essential as a foundation for a lasting and profitable relationship. The Waterbury Policy is in print and available to all our dealers and distributors. It is definite and clearly states our policy of protection of dealer and distribution rights, as well as the factory attitude toward factory—distributor—dealer relationships. Waterbury wants their dealers and distributors to be satisfied and prosperous members of the Waterbury Family for many years to come!



### Factory Interest in Every Job

Waterbury believes that every distributor should have resources available to every dealer that will insure satisfactory installation and operation of every unit. The factory should have the means to give real support to this program.

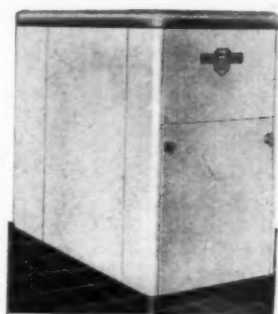
### An Aggressive Advertising and Sales Promotion Campaign

Waterbury's national efforts have established consumer acceptance and made sales easier for Waterbury Dealers. The 1949 campaign is now helping dealers' sales efforts throughout the country.



# Waterbury

## Has the Complete Line For the Modern Dealer



Waterbury has a unit to fit your customer's choice of fuel—Coal—Oil or Gas no matter what size unit he may require.

Waterbury has a unit for every size home. If your customer wants to heat a cottage—or a large home, church or store—Waterbury can do the job.



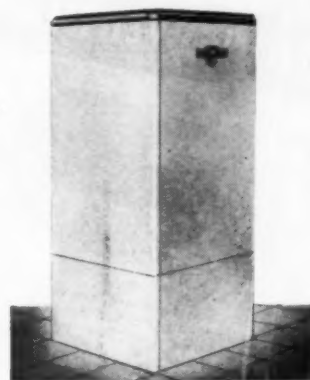
Waterbury has units for basementless homes or homes where basement floor space is at a premium. All Waterbury units are designed for their special purpose.



All Waterbury units have efficient design—precision engineering—careful manufacturing. Each is backed by a reputation for sound workmanship that has stood the test of over 40 years!

### THE MASTER BLOWERTROL

We are convinced that this is the best means of achieving true continuous blower operation—it means more satisfied customers—the end of stratification and "Cold 70." Combined with precision-engineered Waterbury Air Conditioners, it is Modern Perfection in warm-air heating.



*It's What's Under the Casing that Counts!*

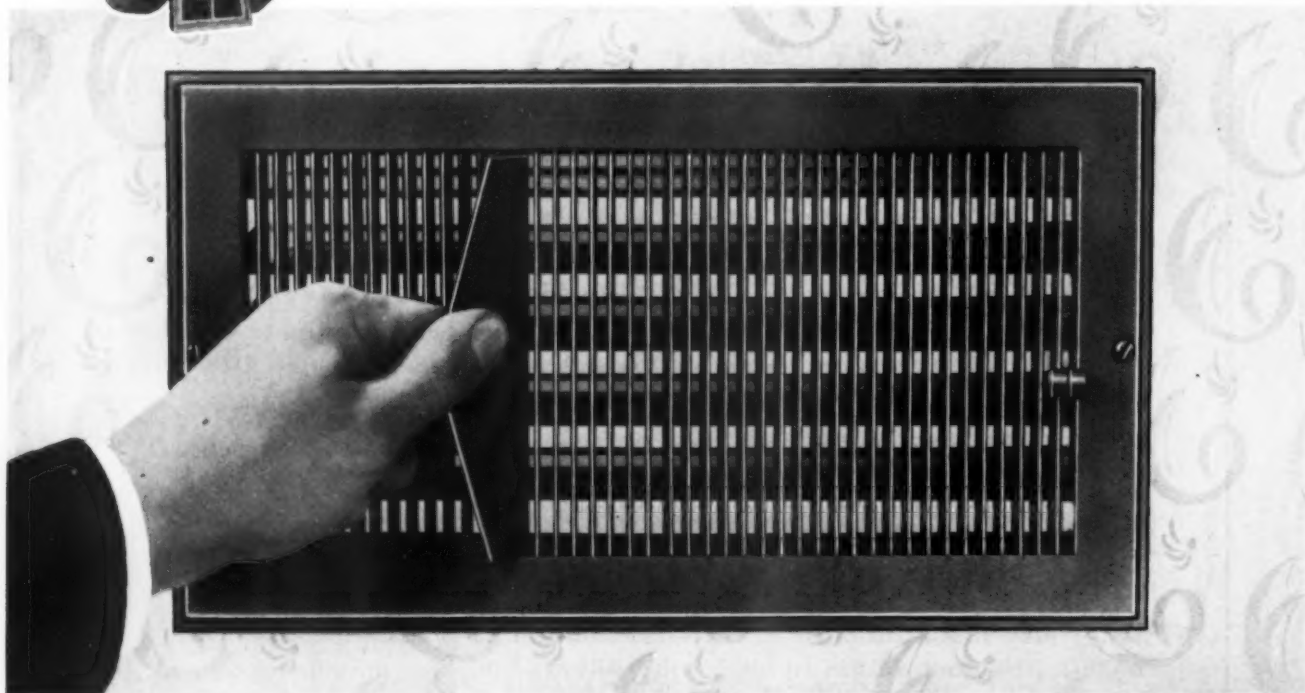
## THE WATERMAN-WATERBURY COMPANY

1122 Jackson St. N.E.

Minneapolis 13, Minn.

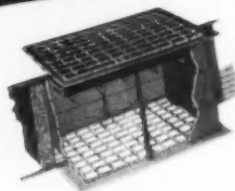


# ***This is It!***



## ***America's Most Versatile Air-Conditioning Register — U. S. No. 256***

***Special!***  
**U.S. NO. 360 ADJUSTABLE  
CEILING VENTILATORS**



Materials are available so "we're back in the Saddle again" on this popular complete package unit. It includes No. 400 Trusstee Floor Register (black Japan finish) — for second floor — and an embossed white grille for ceiling.

A NEW exclusive U. S. feature is the 3-piece telescoping box — adjustable from 4" to 12" — so unit can be used for ceilings or sidewall inter-room installation.

Packed in strong individual cartons that save 1/2 in storage space. Order now for prompt shipment.

Smartly modern and clean in design . . . easily installed . . . reasonably priced . . . efficiently applicable for *all* heating or cooling outlets . . . U. S. No. 256 is the last word in Air-Conditioning registers.

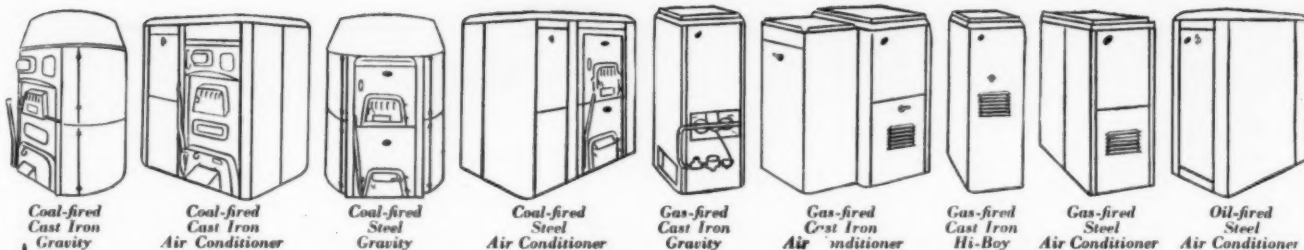
It can be installed on sidewall or ceiling — with the air-flow from *any* direction — and it works perfectly. The sturdy grille bars are easily bendable (with setting wrench) for any practical directional flow to left or right. Smoothly operating back louvres direct the flow straight or down. Does not require special Stack-Heads — Can be used with Round Back — Cut-Off Back or Square Back Stack-Heads.

Through all the years of material scarcity the quality of the No. 256 has been steadily maintained and improved. When a better register can be made, U. S. will make it. Standard sizes are recommended in ordering the No. 256, but other sizes can be made on special order.

Send for latest catalog of complete line.

**UNITED STATES REGISTER CO.**  
BATTLE CREEK, MICHIGAN  
MINNEAPOLIS KANSAS CITY ALBANY





A QUALITY LINE your customers will appreciate

# Rybolt HEATING UNITS

## Forced Air and Gravity - Cast Iron and Steel



The Rybolt quality line offers the consumer top drawer value for his heating dollar—the *utmost* in comfort, convenience, dependability and fuel economy. With due allowance for its superior quality and the fact that it is built for many long years of service the Rybolt line is comparatively low in price. Embodying the most advanced heating principles,

there are Rybolt units specifically designed for every home heating fuel—coal, gas or oil. The coal units, cast iron or steel, can be easily and quickly converted to firing with gas or oil—then back again to coal firing, if emergency demands. Strengthen your position in the home heating field with the Rybolt complete line.



*Write for Details*



# THE RYBOLT HEATER COMPANY

615 MILLER STREET



ASHLAND, OHIO

Bright, sanitary and mighty profitable, too . . . equipment in this modern hospital kitchen was fabricated of stainless steel by Cutter Sheet Metal Manufacturing Company, Cleveland, Ohio. This job is typical of many such installations handled by this firm in the past twenty years.



#### CLEVELAND CONTRACTOR SAYS:

*"You Can't Beat Stainless Steel Business!"*

One of Cleveland's outstanding sheet metal contractors, M. J. (Mike) Cutter, Cutter Sheet Metal Manufacturing Company, has this to say about Republic ENDURO Stainless Steel:

"My first stainless steel job—a school cafeteria—was completed way back in 1928. Since then, I've handled, so they tell me, about as much ENDURO Stainless Steel as anyone in this type of business.

"Among the things I've learned about stainless steel work, two stand out at the top of the list:

1. You can't beat stainless steel business for profit.

2. Anyone who can do a good job in ordinary metal, can do the same thing in stainless . . . with the same tools.

"Twenty years ago, I made up my mind that I would concentrate on stainless steel work. Today, with an average of 36 workers in the shop, I'm mighty glad that I did."

Would you like to have all the facts about stainless steel fabrication? Write today, for a copy of Republic's FREE booklet, "The Fabrication of Republic Enduro Stainless Steel."

#### REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio  
GENERAL OFFICES, CLEVELAND 1, OHIO  
Export Dept.: Chrysler Bldg., New York 17, N. Y.

*Enduro* **STAINLESS STEEL**



✓ Check ALL 12 advantages: • RUST AND CORROSION-RESISTANCE  
• HEAT-RESISTANCE • HIGH MELTING POINT • LOW COEFFICIENT OF EXPANSION •  
HIGH STRENGTH • GOOD DIMENSIONAL STABILITY • NO METALLIC CONTAMINATION  
• EASY TO CLEAN • EASY TO FABRICATE • EYE APPEAL • LONG LIFE • LOW END COST



# AMERICAN-Standard

## First in heating...first in plumbing

*Introducing* A BRAND NEW WINTER AIR CONDITIONER  
for small homes and individual apartments

### The WINTERGLO

An oil fired "high boy" type unit  
designed especially for  
utility installations



■ In size . . . in quality of construction . . . and in efficiency of performance, the new Winterglo is just right for installation in closets, alcoves or unused corners—upstairs or down. You'll have many opportunities to sell this attractive unit to your small home and apartment prospects.

Engineered exclusively for oil firing, the new factory assembled and pre-wired Winterglo is a complete unit so compact that it can be installed easily in a minimum of space. Its special flange model Arcoflame Oil Burner burns any domestic fuel oil with efficiency and economy.

Built to rigid specifications, the new Winterglo has a rugged heating element of heavy gauge steel; strong, leakproof welded seams; and quiet, double inlet type, rubber mounted blower and motor. Although peak efficiency is attained with the Arcoflame Oil Burner, the Winterglo is also available without burner.

For further details about the new Winterglo and other winter air conditioners by American-Standard, contact your Wholesale Distributor. **American Radiator & Standard Sanitary Corporation**, P. O. Box 1226, Pittsburgh 30, Pennsylvania.

The Winterglo is made in two sizes—with 85,000 and 105,000 Btu output per hour at bonnet—to meet small home heating requirements. Listed for closet installation by Underwriters' Laboratories and approved for less than standard clearance, it fits perfectly into the smallest amount of space in new construction or modernization jobs.

Here's the Ticket



here's the Line

*- to better business in '49!*

When you sell American-Standard products you get all the selling aids you need to bring in more business. Ask your Wholesale Distributor for details of this powerful new advertising and merchandising program.

Look for this  Mark of Merit

*Serving home and industry*

AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILER • ROSS HEATER • TONAWANDA IRON



**CRAFTSMEN  
RECOGNIZE  
QUALITY**

*by these fine features in a*  
**HACKSAW**

**BALANCED**  
for more efficient sawing...less worker fatigue.

**RUST RESISTANT**  
Nickel plating resists corrosion...adds eye-appeal.

**UNBREAKABLE**  
Neoprene handle with man-sized grip, moulded to frame, high dielectric value.

**RUGGED**  
construction of heavy-gauge steel.

**DESIGNED**  
to provide extra strength at points of stress.

**TOUGH**  
Pin Posts are machined from bar stock.

**STRONG**  
Tension Screw, die threaded from bar stock.

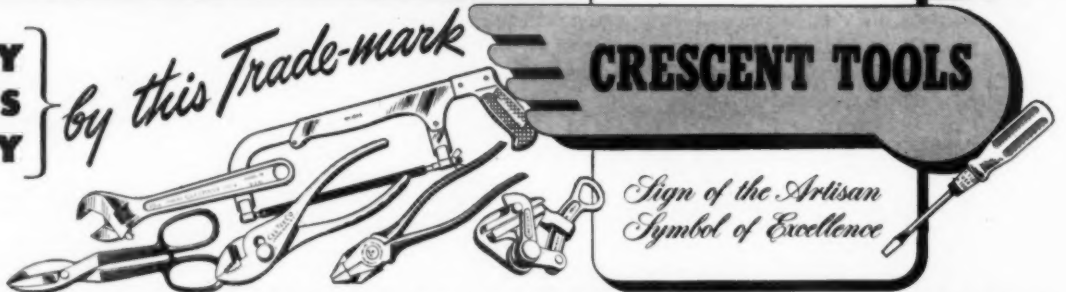
**RIGID**  
construction assures perfect alignment of blades. Straighter cuts...less blade breakage!

**No. 1049**  
is the catalog number of this fine hacksaw.

**EVERYBODY  
RECOGNIZES  
QUALITY**

*by this Trade-mark*

**CRESCENT TOOLS**



"Crescent" is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by  
**CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK**

# Ye Olde **VICTOR**

"BUILT FOR A LIFETIME OF SERVICE"

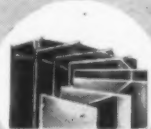


**QUALITY  
FURNACE BUILDERS  
FOR OVER  
HALF A CENTURY**



**INSTALLED IN 1894**  
*and still giving excellent service!*

Write us...  
INVESTIGATE  
**VICTOR**  
It's the  
line for  
'49



WITH HEAT  
RADIATING

**FINS**

TIME means nothing to a rugged VICTOR furnace. The high-wheeled bike, leg-of-mutton sleeve and the hansom cab, all contemporaries of the above VICTOR, are gone . . . but this, and other old VICTORS, installed over half a century ago, are still giving excellent service.

The VICTOR line has grown with the years. New models have been added. New furnaces designed to handle either coal, gas or oil . . . but the same inspired engineering and rugged boiler-plate quality make VICTOR the Line for '49!

**COAL • GAS • OIL FURNACES • OIL BURNERS • STOKERS • BLOWERS • ACCESSORIES**

**HALL-NEAL FURNACE Co.**

VICTOR Quality Furnaces Since 1890

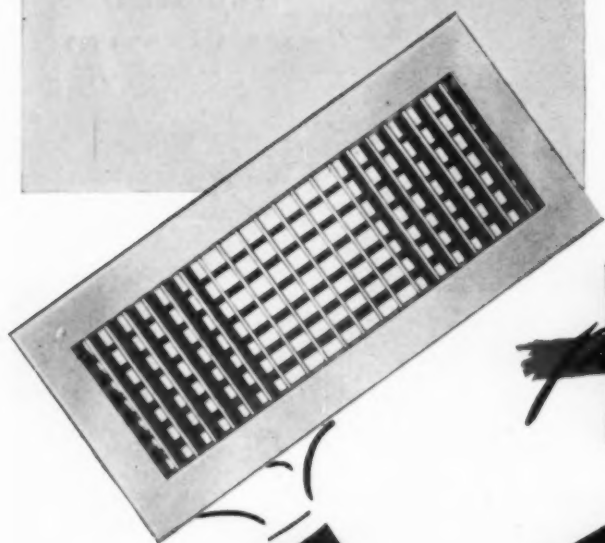
1322 N. CAPITOL AVENUE • INDIANAPOLIS 7, INDIANA

# THE *right* COMBINATION FOR COMPLETE, FLEXIBLE CONTROL OF AIR DELIVERY...

## Tri-Flex

### DOUBLE DEFLECTION T64 GRILLE

Consisting of two sets of individually adjustable Tri-Flex bars, furnished as an integral unit, the Double Deflection Grille offers maximum flexibility for the control of air direction... as well as the throw and drop of the air stream.

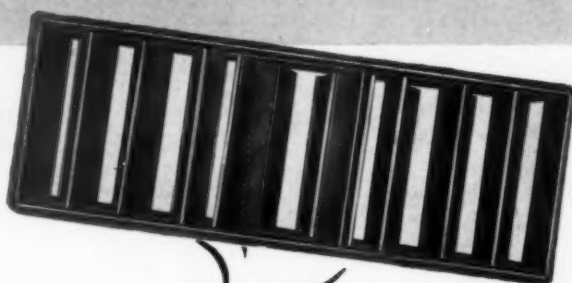


## Santrol

### VOLUME CONTROL

A flexible device constructed as an integral unit with individually adjustable front and rear blades. Rear blades permit accurate control of air volume... front blades assure uniform distribution over the entire supply outlet.

● ● The Tri-Flex Double Deflection Grille installed with the Santrol Volume Control Unit is an all-purpose combination that provides minute adjustment of air delivery to meet the specific performance requirements of every air conditioning installation. No trouble to install... attractive in appearance... and job-proved!



For detailed description, engineering data and size selection information for Tri-Flex Supply Grilles and Registers, Aerovane Return Grilles and Registers and T&B Air Control Devices... write today for a copy of Catalog No. 48S.

### 26 STANDARD SIZES

The 26 standard sizes of Tri-Flex Grilles and Registers — and Santrol Volume Controls — are carried in stock for prompt shipment in sturdy cartons that prevent damage in transit or on the job.

8 x 4	20 x 8
10 x 4	24 x 5
10 x 6	24 x 6
12 x 4	24 x 8
12 x 5	24 x 10
12 x 6	24 x 12
14 x 4	30 x 6
14 x 5	30 x 8
14 x 6	30 x 10
16 x 5	30 x 12
16 x 6	36 x 8
20 x 5	36 x 10
20 x 6	36 x 12

**TUTTLE & BAILEY inc**

NEW BRITAIN, CONNECTICUT



From Any Angle...they're really *"Year's Ahead"*

**BURN No. 3 OIL**

**EASIER TO SERVICE**

**ENTIRELY NEW**

# **MONCRIEF'S NEW LINE OF PRESSURE VAPORIZING OIL FIRED UNITS**



Moncrief's entirely new, Pressure Vaporizing Units are now ready, in plenty of time to supply the demand for modern, yet low-priced heating equipment in 1949 houses and housing units.

The superior pressure vaporizing burner has been approved by Underwriters Laboratories to burn No. 3 fuel oil, as well as the lighter domestic grades. Factory assembled and factory adjusted, it is supplied ready to be inserted in the combustion chamber in a matter of a few minutes. Through the use of an ingenious mounting plate, it is not only installed, speedily, but it is installed correctly, also. Removal of the burner for servicing or inspection is as simple as installing it.

This good looking unit with its baked enamel cabinet of modern design with attractively rounded corners is supplied assembled, ready for the oil burner to be installed.

One of its most valuable features is the rugged, long lived heating element of No. 14 gauge steel construction.

For high quality and low cost, it's Moncrief in 1949! Send for literature. See your Moncrief jobber.

It's a matter of minutes to install or remove the complete Moncrief oil burner.



76,000 Btu Output  
No. VL-65 Air  
Conditioning Unit



75,100 Btu Output  
No. VU-75 Utility  
Unit



71,200 Btu Output  
No. VW-61  
Gravity Furnace

**THE HENRY FURNACE COMPANY**

Medina, Ohio

HEATING AND AIR CONDITIONING UNITS

**MONCRIEF**  
SINCE 1895

FURNACE PIPE AND FITTINGS

# BETH-CU-LOY SHEETS LAST LONGER

*they're  
Copper Bearing*

You don't have to be a metallurgist to understand why Beth-Cu-Loy Sheets last 2 to 2½ times longer than ordinary sheets. Their extended life is due chiefly to the fact they are made from open-hearth steel containing 0.20 to 0.30 pct copper.

Tests conducted by the American Society for Testing Materials prove that steel sheets of this analysis have far higher resistance to atmospheric-corrosion than sheets of ordinary carbon steel.

For further protection against rust, Beth-Cu-Loy sheets are furnished with a bright coating of Prime Western zinc. This combination of a copper-bearing steel base with galvanized surfaces makes ideal sheet material for use in air ducts, conductor pipe, skylights, cornices and other jobs where long service is important.



BETHLEHEM STEEL COMPANY  
BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by  
Bethlehem Pacific Coast Steel Corporation*



## GALVANIZED STEEL SHEETS



## Meet the **NEW PETRO** Warm Air Unit

MODEL A-75

Now, with this new Petro, you have a "natural" for the home that wants an automatic warm air heating unit of 75,000 Btu an hour. For the Model A-75 has been designed expressly to meet this very need.

Constructed in accord with basic principles that reflect Petro's 45 years' specialized oil heat experience, it is built both to please the fuel budget and to appeal to the eye. To please the fuel budget—through its  $\frac{3}{4}$  gallon per hour "oil miser" oil burner that produces more heat from less fuel. To appeal to the eye—through its

rich, handsome finish that harmonizes with any surroundings. Powerful selling features you can really cash in on!

For further facts and figures, see the Petro heating and plumbing jobber in your wholesale trading area.

### PETROLEUM HEAT AND POWER COMPANY

Stamford, Connecticut

Makers of Good Oil Burning Equipment  
Since 1903

REFINERIES . . . FUEL OIL STORAGE AND DISTRIBUTION TERMINALS  
NATIONWIDE OIL BURNER SALES AND SERVICE FACILITIES

# PETRO

REG. U. S. PAT. OFF.

OIL BURNERS • BOILER-BURNER UNITS  
FURNACE-BURNER UNITS • WATER HEATERS

### What this new PETRO offers:

**HIGH HEAT TRANSFER:** Assured by design of furnace, and by fire box and heat transfer surfaces precisely engineered for  $\frac{3}{4}$  gallon flame.

**AIR CLEANING AND HUMIDIFYING:** In addition to heating and circulating.

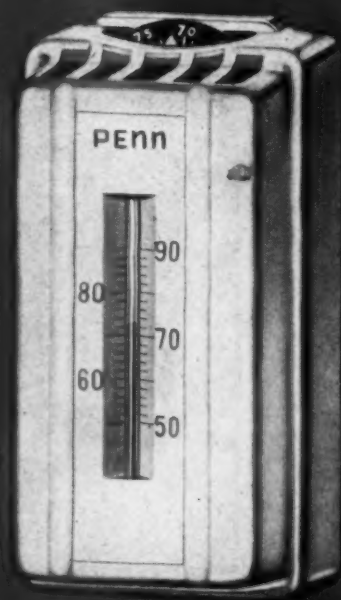
**BURNER FEATURES:** Safe, reliable, continuous electric ignition; heavy-duty, long-hour motor with automatic overload switch; over-sized transformers, radio-shielded and moisture-proof.

**FUEL OIL SAVINGS:** By supplying 75,000 Btu's per hour, Model A-75 meets the need of low oil consumption in homes where a larger furnace output would result in costly, prohibitive fuel bills.





"WHEN YOU'VE SEEN  
WHAT I'VE SEEN  
YOU'LL STICK TO



# PENN THERMOSTATS

**FOR CLOSER TEMPERATURE CONTROL"\***

"In the 15 years since Penn developed the *heat anticipation* principle I've never seen anything to beat the accuracy of Penn thermostats. The *heat anticipation* story makes sense to me and *Penn performance really counts with my customers.*

"I've seen the Penn thermostat consistently hold temperatures within one-half degree of the selected level—and brother, that's comfort without fancy language. It means customer satisfaction, too, that helps me sell more Penn controlled jobs."

Penn thermostats actually antic-

ipate changes in room temperature. They bring the burner "on" before the chill of "cold 70," and they shut the burner "off" before it overshoots. These shorter, more frequent operations result in the even flow of warmth that spells real heating comfort. Besides this accuracy and dependability of Penn thermostats you'll appreciate the simple two-wire installation.

For fuel-saving automatic set-back of temperature Penn Tem-Clock provides the most convenience. This accurate electric timepiece may be

mounted in any room in the house regardless of thermostat location. Settings are easy to make, and easy to change without removing cover.

For satisfied customers, and for extra profits, standardize on Penn controls for all heating applications.

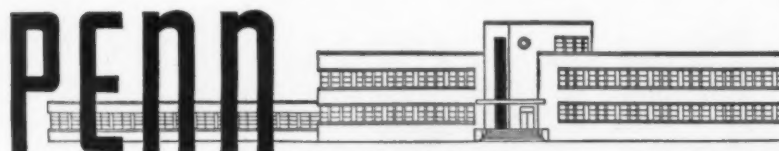
**Penn Electric Switch Co., Goshen, Indiana.**  
Export Division: 13 East 40th Street, New York 16, N. Y.  
In Canada: Penn Controls Ltd., Toronto, Ontario.



**Here's What Penn  
Heat Anticipation  
Does...**

- \* Holds the temperature within one-half degree of selected level.
- \* Avoids "cold 70"; ends discomfort of "zig zag" heating.
- \* Automatically compensates for outside weather conditions.
- \* Provides more frequent, short burner operations instead of longer runs and standby periods, assuring even flow of warmth for greater comfort and fuel economy.

*It "hugs" the selected level for closer temperature control*

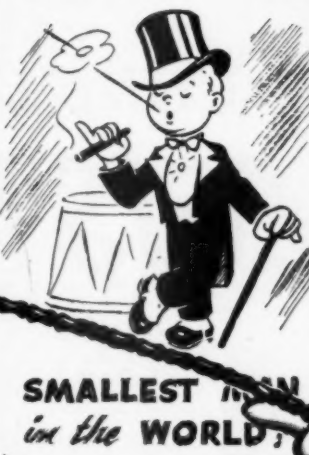


**AUTOMATIC CONTROLS**

**FOR HEATING, REFRIGERATION, AIR CONDITIONING, PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES**



**TINY TIM**



**SALOME**



# ***NOW* YOU SELL THE SIZE AS WELL AS THE SIZZLE**

... cause now there are **MOR-SUN DIES FOR EVERY SIZE!**

The world's most efficient heat exchanger . . . plus the correct size for every installation . . . now make it possible for MOR-SUN Merchandisers to sell the size — the correct size — as well as the sizzle!

To a long list of outstanding sales features which have made the MOR-SUN the world's largest selling, die-pressed steel furnace, Morrison Steel Products, Inc., now has added *size-appeal*. A complete range of models — suitable for Cape Cod cottages or Fifth Avenue brownstone mansions — now enables MOR-SUN Merchandisers to build sales on the efficiency of a furnace built for a particular job plus the economy of mass-production.

These new MOR-SUNS open a great new market. The over-sized or under-sized or odd-sized-intermediates can now have MOR-SUN beauty in their basement rumpus rooms, utility rooms, or utility closets.

*Get the story of the new MOR-SUN buy-sized, factory-assembled, factory-packaged warm air conditioners from your MOR-SUN representative . . . or write us.*

**MORRISON  
STEEL PRODUCTS, INC.**

BUFFALO 7, N. Y.



"TOASTER"  
MODEL

"UTILITY"  
MODEL

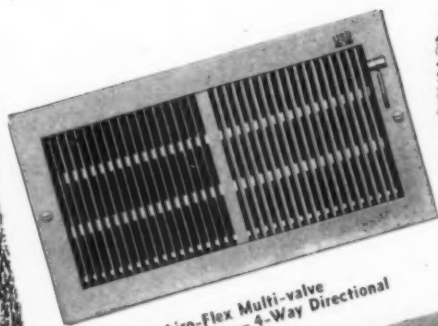
For . . .

GAS —  
OIL —  
LIQUIFIED  
PETROLEUM  
GAS —



*"The Sun Never Sets  
with MOR-SUN"*

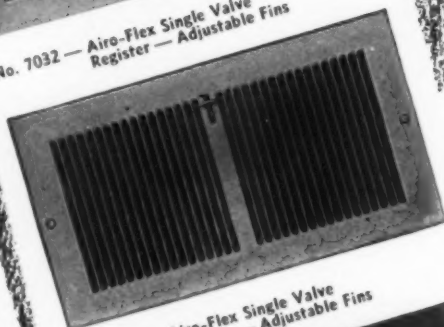
# Auer *Finer* Air Conditioning **REGISTERS**



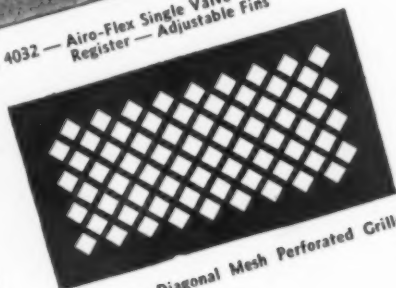
No. 4432 — Aero-Flex Multi-valve Register — 4-Way Directional



No. 7032 — Aero-Flex Single Valve Register — Adjustable Fins



No. 4032 — Aero-Flex Single Valve Register — Adjustable Fins



No. 18A — Diagonal Mesh Perforated Grille

Shown here are just a few of the most popular models in Auer's complete line of registers, intakes and grilles for air conditioning. There are many other designs, including all approved air directional and multi-valve types—also a wide selection for all gravity heating purposes. For quality and value, let Auer supply your register needs.



**THE AUER  
REGISTER CO.**

**3608 Payne Avenue  
Cleveland 14, Ohio**

Ask for complete Auer Register Book, or separate Grille Catalog "G" on perforated grilles.

**Auer** **REGISTERS**  
& GRILLES for AIR CONDITIONING & GRAVITY



**DRAVO**  
*Counterflo*  
**HEATERS**  
**AVAILABLE**  
**IMMEDIATELY!**



**NOW**—Dravo *Counterflo* Heaters can be shipped promptly from stock.

**NOW**—The unsurpassed leader for open-space heating is available immediately.

**AND**—Immediate availability means that you can take advantage of the summer air-circulating feature right now. You simply flick the selector switch and the large fans instantly go to work to help maintain comfortable working conditions for employees. Even more important, you'll be prepared in advance for next heating season.

In thousands of industrial and commercial establishments you'll find Dravo *Counterflo* Heaters establishing records for efficiency and economy. They'll prove their worth to you, too, and they can be

**SHIPPED IMMEDIATELY FROM STOCK** for Winter Heating and Summer Ventilating.

For quick action call the Dravo Representative listed under "HEATERS" in your classified telephone directory, or contact Heating Section, Dravo Corporation, Pittsburgh 22, Pennsylvania.

Dravo also manufactures the DRAVO CRANE CAB COOLER for air conditioning hot-metal crane cabs.

**DRAVO CORPORATION**

PITTSBURGH • CLEVELAND • PHILADELPHIA • DETROIT • NEW YORK  
CHICAGO • ATLANTA • BOSTON

*Sales Representatives in Principal Cities*



# NEW!



*...All New...for '49*



The LAU 9000 Series

## Package Unit

PACKAGE BLOWER FILTER UNIT

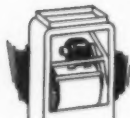
### Greater Profits . . . More Business For You

Sell the "Finest Line for '49." It means quicker . . . easier profits for you and extra satisfaction for the consumer. The New LAU Package Unit steps up the efficiency of any gravity type warm air furnace. Provides evenly balanced temperatures. Distributes warm, comfortable, filtered air to every room in the home. And at outstanding LOW COST! Beautiful casings, modernly styled in heavy gauge steel . . . surf green baked enamel finish . . . chromium hardware . . . 1" thick throwaway filters. Get QUICK DELIVERY on all sizes. Capacities for dwellings of five to eight rooms. Adaptable to C-A-C requirements.

★ THE FINEST LINE FOR '49 ★

Write Today—Dept. "A"—for complete details—No Obligation

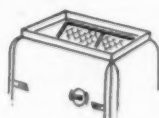
#### COMPARE THESE SUPERIOR FEATURES



Large size access door . . . easy to service motor, belt or filters.



Greater motor speed range in accordance with C-A-C requirements.



Easy to fit cold air return to top of unit . . . more compact housing.



Bearings and motor rubber cushionized. Low speed, quiet operation.



No metal to metal contact between blower and casing.



Handsome modern styling . . . Surf green baked enamel finish.

The  
**LAU** BLOWER  
Company

DAYTON 7, OHIO, U. S. A.

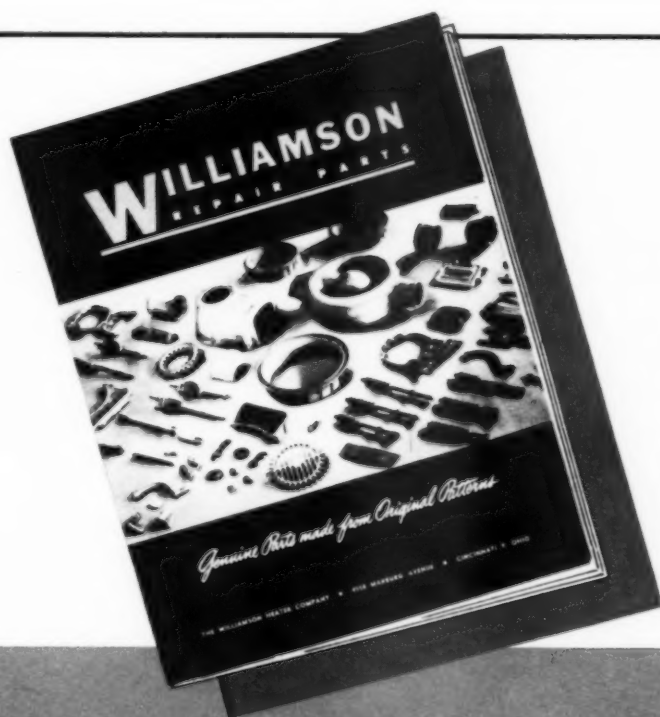
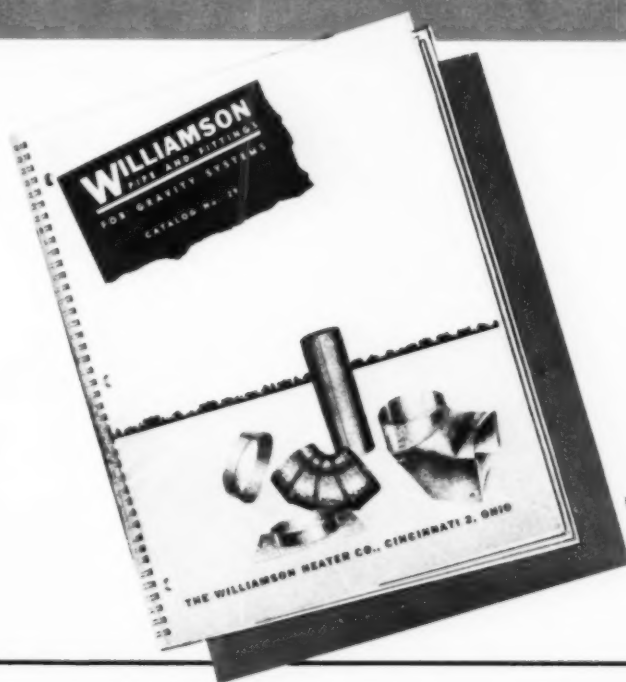
WORLD'S LARGEST MANUFACTURER  
OF FURNACE BLOWERS



*In 49 it's the Williamson All-Fuel Line*

### Williamson Pipe and Fittings

High quality of design and workmanship—plus quality materials and careful inspection save pay-roll dollars and give you installations your customers are proud of. And the line is complete for Gravity and Forced Air. The coupon will bring the Catalog and the name of our Distributor nearest to you.



### Williamson Repair Parts Castings

There's profit, as you know in Repair Service and no other service leads to more profitable replacement sales. When you replace a Williamson part, do it the easy, profitable way—sell only genuine Williamson parts, made in regular daily foundry production and inspected for sale as parts of New furnaces. If you don't have the catalog—just mail the coupon.

*Get the facts  
Mail this coupon Today*

THE  
**WILLIAMSON**  
HEATER COMPANY

4558 MARBURG AVE., CINCINNATI 9, OHIO

To — THE WILLIAMSON HEATER COMPANY  
4558 MARBURG AVE., CINCINNATI 9, OHIO.

Send us —

- ☐ Furnace Catalog   ☐ Fittings Catalog   ☐ Repair Catalog  
☐ The name of your nearest Distributor.

Name \_\_\_\_\_

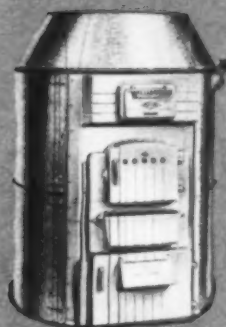
Address \_\_\_\_\_

City and State \_\_\_\_\_





Standard Cast Flo-Warm



Triplife Cast Gravity



Triplife Cast Flo-Warm

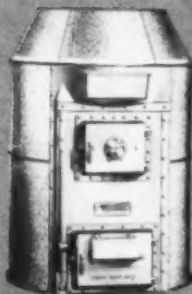


Standard Cast Gravity

*In '49 it's the Williamson  
All-Fuel Line*



Super-Steel Flo-Warm



Super-Steel Gravity



Oil-Fired Flo-Warm

Since 1890 Williamson Heating Equipment has been built to insure Winter Comfort. And, in 1949 the Williamson All-fuel Line is the best Comfort Insurance any Home Owner can buy—the best insurance you can sell him. Because, Williamson All-fuel furnaces are readily adapted to Oil and Gas firing, as well as Stoker firing. With a Williamson your customer's Comfort and his Good Will are insured—You're the beneficiary. For those who demand it there's a New Oil-fired Winter Air Conditioning Unit.

**WILLIAMSON**  
ALL-FUEL FURNACES

# THE *Comfort* LINE FOR '49:

Distributors—Dealers—  
Users acclaim,

"It's the Leader!"



The COMFORT Air-Washer steals the show wherever it's seen! This "King of the Coolers" is doing the right cooling job in all types of commercial and industrial applications. Included are: Chain stores, restaurants, garment factories, flower shops, etc.

**NOW: Standard Equipment on the entire Comfort line: BONDERIZED Fiberglas\* FILTERS which mean greater absorption . . . higher efficiency . . . freedom from odors.**

\*Registered

**NEW for '49:** The 20-E (2,000 CFM) blower type window cooler which requires but 8 inches inside window space. \* \*

**ALSO:** 3 models (2,000 CFM) fan-type window coolers with or without pumps. New design increases output, reduces noise level. \* \*

\*\*Finished in pastel colors to match room decorations.



**AIR-WASHER** assures a 100% fresh air change every few minutes, season-after-season.

**COMMERCIAL AND INDUSTRIAL USERS** say, "this is it!" The Comfort Air-Washer is an eye-opener. It's better 8 basic ways: Unique water-flinger, stair-stepped filter pads (of fiberglas) and all-steel construction are but a sample! Let us tell you more about it!

## COMFORT PRODUCTS CORP., Dallas, Texas

I would like to have you give me complete information regarding the Comfort line for '49.

I am a dealer ☐ I am a distributor ☐

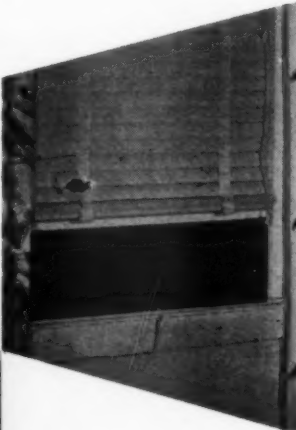
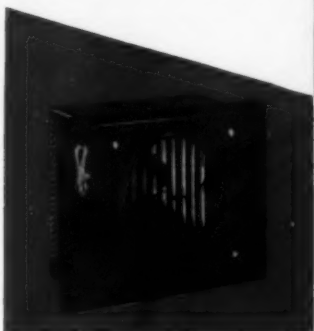
Name \_\_\_\_\_ Title \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

# COMFORT PRODUCTS CORP.

2220 LAMESA • DALLAS, TEXAS



**BETTER,  
FASTER  
SHEET METAL  
WORK  
with  
WISS  
METAL-MASTER SNIPS**

Examples of intricate designs which can be cut with Metal-Master Snips.

CUT PRODUCTION COSTS! Wiss Metal-Master snips save on-the-job time, an important factor in sheet metal work. Here's why:

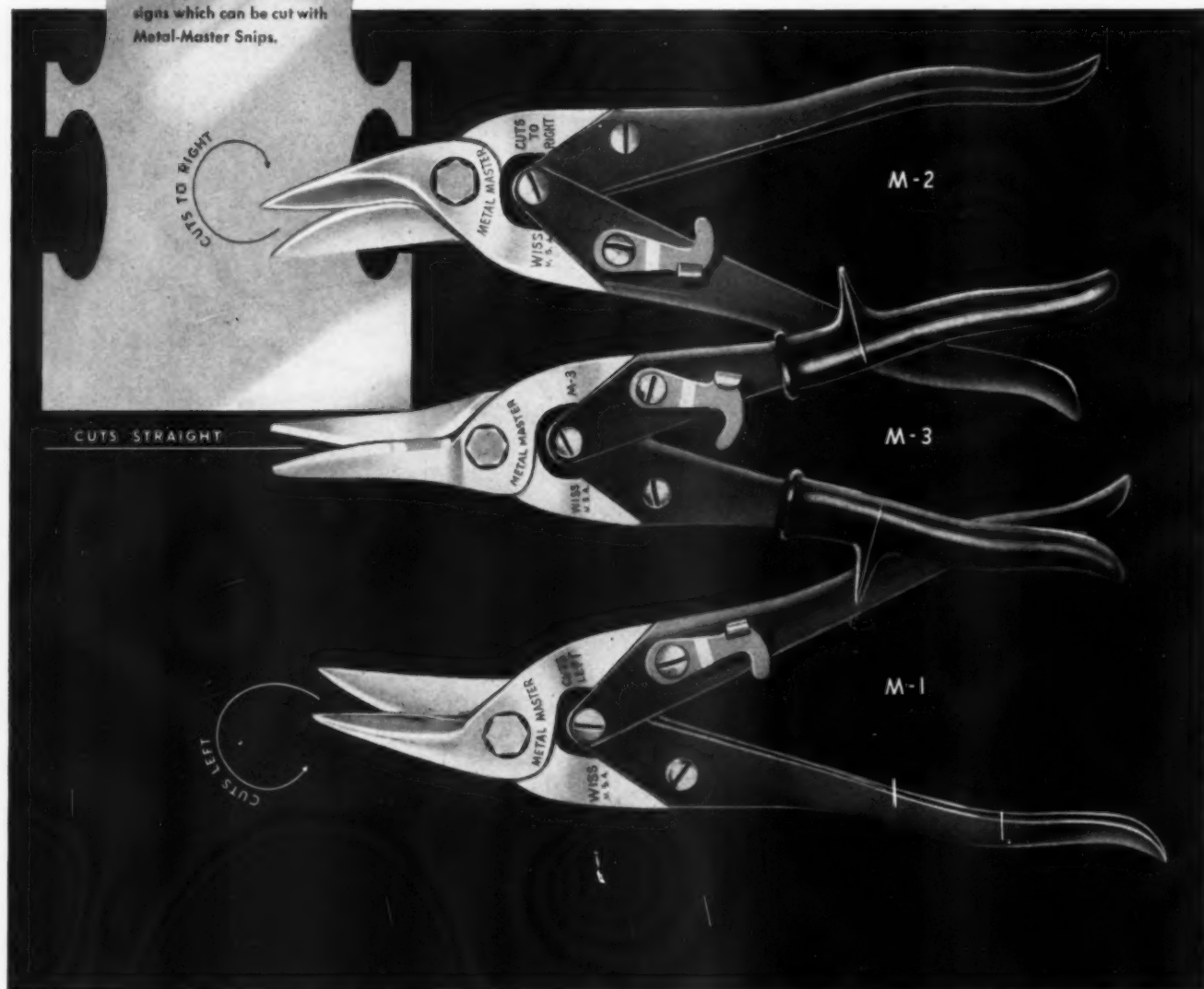
**EASIER CUTTING:** Their *compound leverage* action makes cutting much easier and *faster*. Action is smooth and uniform from the back of the jaws to the point.

**"TAILORED" FOR THE JOB:** The three snips shown save time because they are designed to handle specific jobs with greater efficiency and speed. They are faster and more accurate for cutting inside holes and for the most intricate patterns and curves.

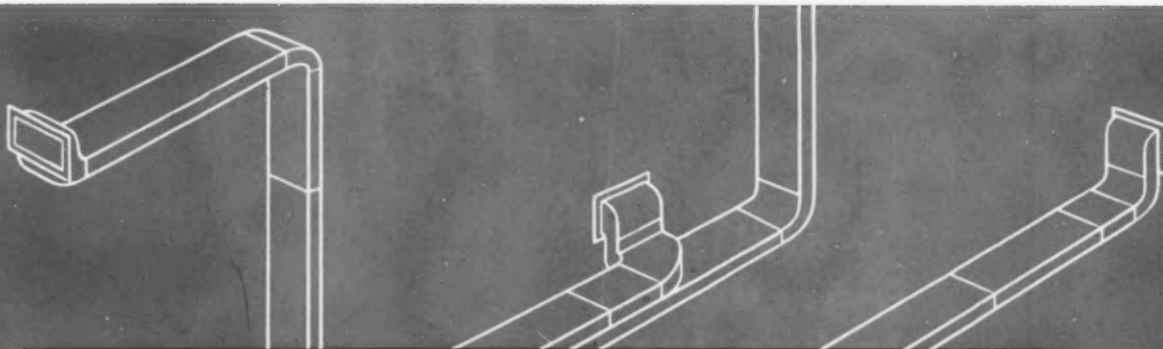
Metal-Masters can be carried in the pocket. They are so versatile that there is no need to carry an assortment of heavy, bulkier tools from job to job.

*Quality for over a Century*

**J. WISS & SONS CO., NEWARK 7, NEW JERSEY**

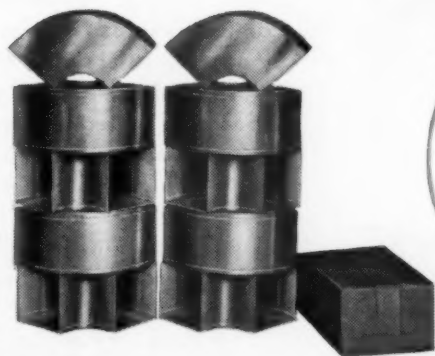




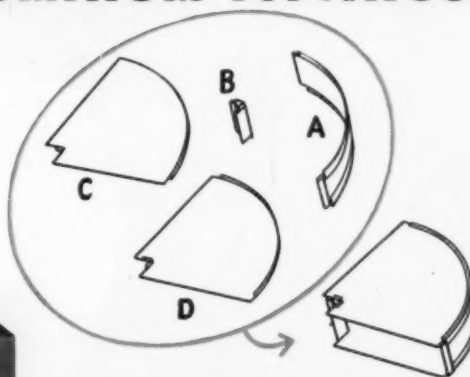


*Easy does it*

## "EASY-FIT" ALUMINUM FITTINGS



Easy to Stock! 10 Easy-Fit 90° Horizontal Elbows shown above come packed in space-saving carton on right. Save up to 75% on your fitting storage space.



Easy to Assemble! All parts furnished to complete 90° Horizontal Elbow as shown. Open Pittsburghs are formed on Heel (A) and Throat (B)—Flanges are turned on cheeks C and D. Fit your parts together, close Pittsburghs with mallet, and you have your 90° elbow ready for use.

"Easy-Fit" Fittings available for complete duct work: Trunk Duct, Wall Stack, Transitions • 45° Vertical and Horizontal Angles • 90° Vertical and Horizontal Angles • Horizontal and Vertical Stack-heads • Top and Horizontal Trunk Takeoffs • Drive, S and Plenum Clips • Collar Connectors, Registers and Grilles • Bending Tools.

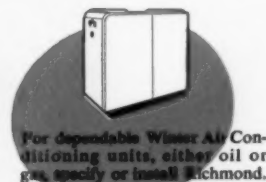
EXTRA PROFIT IS YOURS WITH "EASY-FIT" precision tooled light-weight Aluminum fittings. No scrap or waste—do more jobs at no cost increase. Standardized sizes conform to National Warm Air Heating and Air Conditioning Association

codes. All these advantages, plus a neat, economical, finished job, mean good news to contractors who have felt the pinch of metal shortage or the rising cost of duct installation. Write today for full details, using coupon below.



# RICHMOND

RICHMOND RADIATOR CO.—AFFILIATE OF REYNOLDS METALS CO.



Vitreous China



Gas Boilers



Enameled Cast Iron Ware



Winter Air Conditioners  
Gas—Cast iron or steel  
Oil—Steel

### MAIL COUPON TODAY

AA-3

Richmond Radiator Company  
19 East 47th Street, New York 17, N. Y.

I am interested in further information on "Easy-Fit" Aluminum Fittings. Please send me latest catalog, no obligations, of course.

Name .....

Company .....

Address .....

*Humidity*  
 — a vital  
 ingredient  
 in heating  
*Skuttle*  
**HUMIDIFIERS**



**SERIES 500  
 FOR COAL—STOKER OR  
 HAND-FIRED WARM AIR**

High plenum temperature in coal-fired plants provides plenty of evaporation from large pan. Plates not necessary where temperatures are above boiling. Skuttle safety type valve assures trouble-free, automatic water feed.



*Skuttle*



**SERIES 600  
 FOR OIL OR GAS-FIRED  
 FORCED WARM AIR**

The answer to the humidity problem where plenum temperature is low. Skuttle Vapoglas Plates are being used by approximately 80% of the heating industry. 56 sq. in. per Vapoglas Plate exposed to heated blower air provides needed evaporation area for humidity. Single size Series 600 holes 5 to 20 plates—for jobs up to 180,000 BTU. Single model fits any bonnet. Self-flushing—self-cleaning.

**FUEL ECONOMY—  
 LONG LIFE**

*Skuttle*

**WINDMASTER DRAFT CONTROL**

Scientifically designed to do a better job of draft control. Test chart shows a flat curve, assuring even, effective control—better operation at all draft values. Square housing and patented angle mounting provide larger effective area—more uniform opening.

Simple, sturdy construction enables you to offer your customer a better regulator for less money—at more profit to you.

*Your jobber stocks Humidifiers  
 and Draft Controls.*

*THE Skuttle*  
**MANUFACTURING COMPANY**  
 4092 BEAUFIT • DETROIT 7, MICH.  
 WRITE FOR DETAILS

# Thatcher



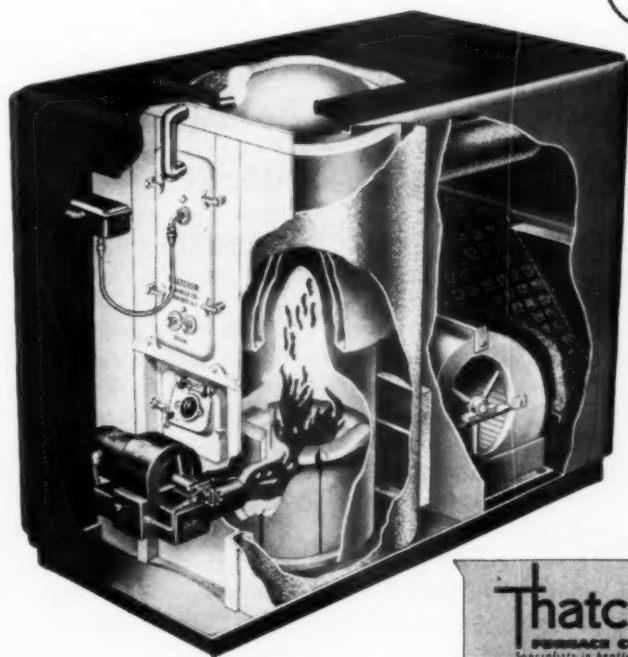
**Pioneer**  
in heating  
in 1850 . . .

**Leader**  
in modern  
home comfort  
today

For 99 years in the industry, Thatcher has always been a leader in discovering, developing, and *perfecting* what's new and better in home heating.

Typical of Thatcher's advanced design is the "V" series Comfortmaster — featured next month in Small Homes Guide. It's a completely automatic, oil-fired winter air conditioner. For the home owner, it's a lifetime investment in carefree comfort.

You'll find superb units for most *every type* of residential heating need in the one Thatcher line. So make a partner of Thatcher's long experience in building modern, trouble-free equipment. Recommend Thatcher—for a minimum of trouble, a maximum of efficiency.



## 7 reasons why it's EASIER TO SELL the Thatcher "V" series Comfortmaster

- Flange Mounted Oil Burner
- Modern Maroon and Grey Slip-Joint Cabinet
- Tailor-Made Combustion Chamber
- Automatic Vaporizing Humidifier
- Squirrel Cage Type Blower
- Welded Steel Gas Tight Radiator
- All Parts Easy To Reach



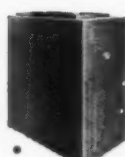
*Specialists in Heating since 1850*

**GARWOOD, NEW JERSEY**



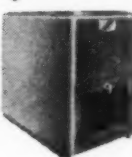
Comfort-master  
Oil-Fired  
Winter Air  
Conditioner

New 550  
Oil-Fired  
Winter Air  
Conditioner



New  
Comfort-master  
Gas-Fired  
Winter Air  
Conditioner

A-204  
Oil-Fired  
Winter Air  
Conditioner



Triple-Fire  
All-Purpose  
Boiler

481 Series  
All-Purpose  
Winter Air  
Conditioner



Oilmaster  
Automatic  
Oil-Fired  
Boiler

C-174H  
Coal-Fired  
Forced Air  
Furnace



Thermaster  
Gravity  
Furnace



## SENSATIONAL NEW REGISTER ACHIEVEMENT!



# Lima

### "WORLD'S FINEST REGISTER"

**Eliminates Quadrant Dampers . . . Makes Balancing  
a One-Man, One-Time Job . . . Lets Homeowner  
Re-Balance His Heating System by Himself!**

Now—save valuable time, labor, and money with the most revolutionary register advancement in a decade!

The Lima Register, with exclusive "Balancing Bell"\* control, makes balancing of heating systems so simple that *one man* can do the job. No quadrant dampers are required. No service calls to readjust heat distribution are necessary!

You give the homeowner one short, easy demonstration of the Lima Register's simple operation, and *he* takes over . . . regulating warm-air flow to suit his needs . . . adjusting temperature

in every room of his house with absolute accuracy! Think of the contribution to *customer satisfaction* this one feature alone makes!

Smooth, streamlined, beautiful in appearance, the Lima Register is designed to give perfect draft-free air diffusion. No center band to resist air flow. Control valve closes tightly for full heat shut-off; no "whistling."

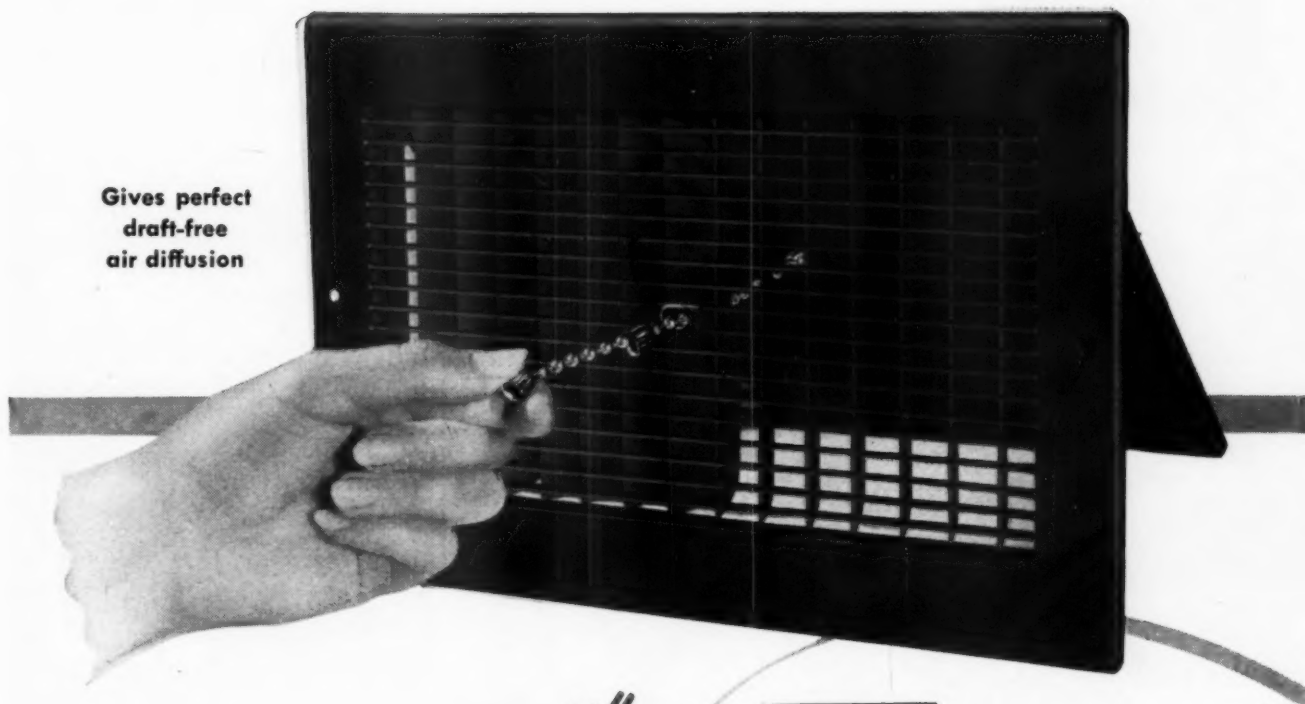
Best of all, new manufacturing processes enable you to install the Lima Register at competitive prices. Find out about this sensational new home heating development NOW!

\*Patent applied for

## EXCLUSIVE *Lima* REGISTER FEATURES

- "Balancing Bell" Control
- Invisible Resistance-Welded Vertical Diffusing Blades
- Streamlined One-Piece Horizontal Face Louvers
- No Center Band to Resist Air Flow
- Strong Die-Formed Piano-Type Valve Hinge
- Steel Spring on Control Valve
- Sponge-Rubber Sealed
- Electrostatically Painted

Gives perfect  
draft-free  
air diffusion



## "Balancing Bell" FEATURE

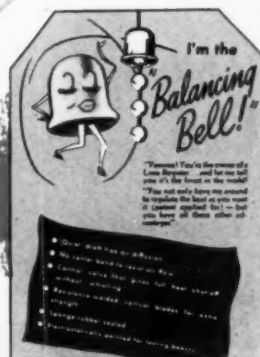
Ends Need for Quadrant Dampers • Permits  
Finger-Tip Heat Control • Saves Installation  
Time and Money • Ends Major Source of  
Service Calls.

Tiny bell on control chain slips on and off chain links  
easily. Gives tailor-made heating comfort to individual  
rooms. Homeowner can shut off heat to rooms in-  
stantly, restore it quickly, easily. No more service calls  
to readjust heat distribution!

**3 sizes—**  
**Forced Air or Gravity**  
**Heating Systems**

Available for both wall and baseboard installation.  
Sizes are 10" x 6", 12" x 6", and 14" x 6".

**THE**  
**Lima**  
**REGISTER COMPANY**  
LIMA, OHIO



this  
instruction  
tag  
is your  
serviceman!

Attached to every Lima Register you install, this  
tag explains the simple operation of the Lima  
"Balancing Bell." Use it as your guide in giving  
homeowner correct instructions on use, and you  
can *forget* about ever calling on him again to  
balance his heating system!

**SEND COUPON NOW FOR DESCRIPTIVE BROCHURE  
ON ALL LIMA REGISTER SIZES AND STYLES**

LIMA REGISTER COMPANY  
651 N. Baxter Street, Lima, Ohio

Gentlemen:  
Please send descriptive brochure on the complete line of Lima registers and  
faces for installation in walls, baseboards and floors.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

## THIS MONTH'S MERCHANDISING IDEA



## AN EXTRA *Profit* FROM YOUR SERVICE CALLS

### SALES VS. SERVICE

Service calls can be *sales* calls, with the right product to sell. For instance: You're called in to replace a burned out stack pipe on a hand-fired furnace. That's a \$10 call and not much profit. So, what else can you sell on that trip? A complete new heating plant? Sometimes. But how about something you can bring along, demonstrate and *sell* most of the time. Here's an example: The Barocheck, a combination draft control and check damper, sells installed for upwards of \$10. And, in return, it offers the home-

Service calls offer important sales opportunities. Below, service man installs a barometric draft control for an extra profit on a routine service call.



A home-maker explains the advantages of her new Barocheck, combination draft control and check damper. An alert service man chalked up an extra \$10 sale here.

maker fuel savings up to 25%, more even heat, longer furnace life, greater safety, less frequent firing. That's a real \$10 worth! And since you're on the job anyway, and can install a Barocheck in 20 minutes, your profit is \$5 or more. That's an *easy* sale.

### THE DAMPER-MOTOR

An even more profitable sale is a damper motor set. The newest model, the Field Fuel Saving System, can be sold installed for about \$45, and provides many of the advantages of fully automatic heating for a fraction of the cost. Still another item to take along and sell on service calls is that new Safety Control recently introduced by Field Control Division, which drops the draft dampers when bonnet temperature gets too high, and the home-maker forgets to check the fire.

### FOOT-IN-THE-DOOR

Home-makers not prepared to buy a complete new automatic heating system are not "lost" as prospects. Sell them inexpensive, semi-automatic heating today, and you'll increase your chances of selling a completely automatic system later. Make those service calls *real* sales calls, and your profits are bound to go up.

Visit the FIELD Booth No. 277, O. H. I. Exhibition, Boston, May 16-20.



Newest damper motor set is the Field Fuel Saving System, a product of Field Control Division, and considered the finest, most compact set available.

## *field* LEADS THE FIELD WITH A DRAFT CONTROL FOR EVERY PURPOSE

### FOR WATER HEATERS

FIELD RNA-W, pre-set, precision-made, the finishing touch to a fine water heater.



### FOR STOVES

FIELD R series, the exclusive, patented Field design brings new economies, finer performance to stoves and ranges.



### FOR HAND-FIRED FURNACES

FIELD BAROCHEK, combination check damper and barometric draft control, for the hand-fired market.



### FOR AUTOMATIC HEATING PLANTS

FIELD TYPE M, the original Field control, first choice for the finest automatic heating equipment.



### SAFETY CONTROL

For hand-fired furnaces, automatically drops draft damper when bonnet temperature approaches a dangerous limit. Remembers when home-maker forgets.



### FIELD FUEL SAVING SYSTEM

FIELD damper-motor set, now, with many exclusive, patented features. Simpler, more compact, easier to install.

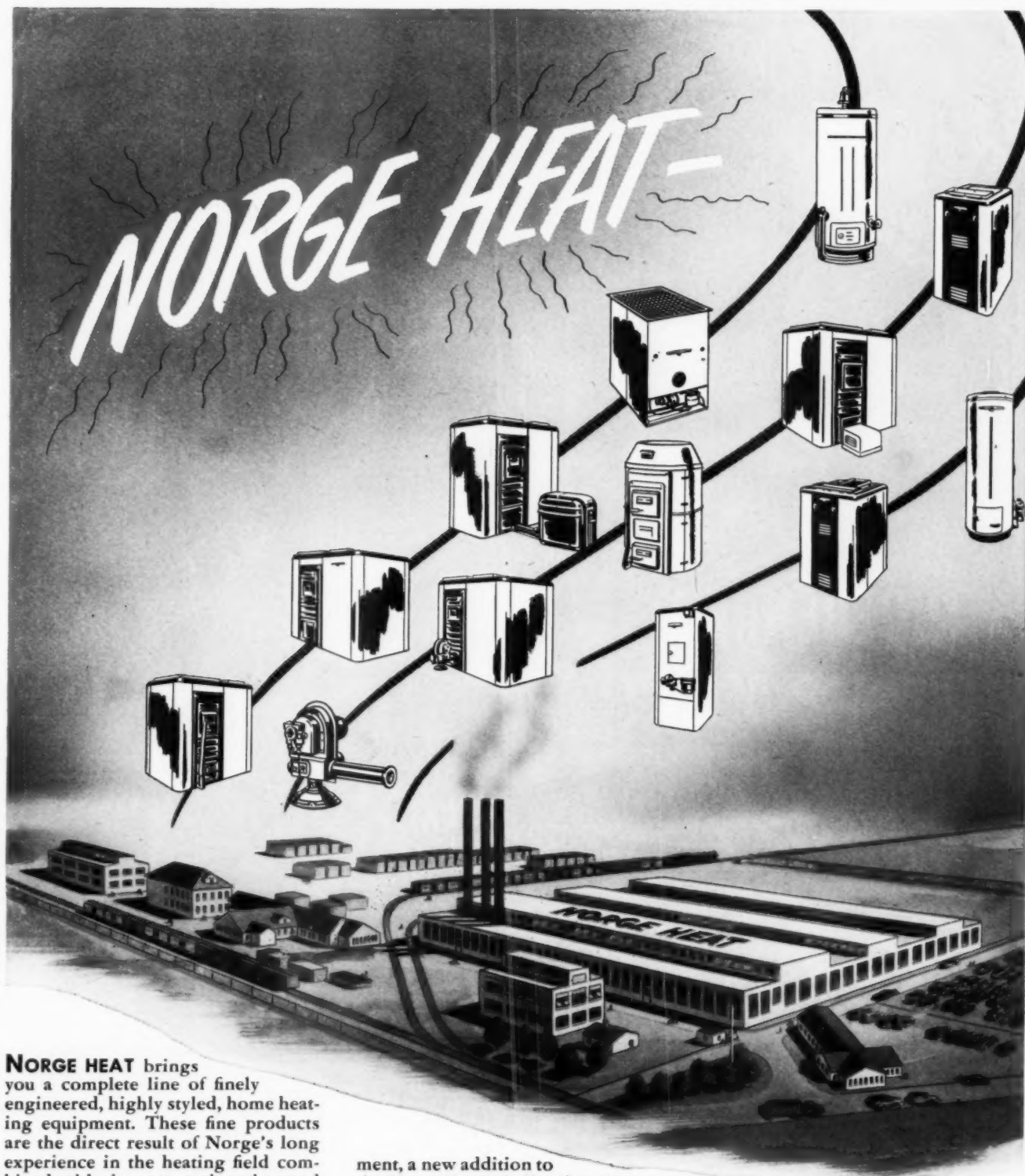


WRITE for full information on the Field Draft Control line.

*field* CONTROL  
DIVISION  
H. D. CONKEY & COMPANY  
Mendota, Illinois



# NORGE HEAT



**NORGE HEAT** brings you a complete line of finely engineered, highly styled, home heating equipment. These fine products are the direct result of Norge's long experience in the heating field combined with the vast engineering and production resources of the Borg-Warner organization.

This unique combination of two great names is your assurance of continued product quality . . . quality that has already found a wide acceptance.

Furthermore, Norge Heat is continuing to improve and expand their lines. Automatic gas heating equip-

ment, a new addition to the Norge lines of oil and coal heating units, will soon be available. New plant facilities have been acquired in Kalamazoo, Michigan and in Elwood City, Pennsylvania . . . and plans are well under way to get them into production.

Complete information is available upon request to all interested dealers and distributors.

## *Norge Heat*

Norge Heat Division • Borg-Warner Corporation • Detroit 26, Michigan

### COUPON

[AA-1]

NAME

ADDRESS

CITY

STATE

**NORGE HEAT DIVISION**

672 E. WOODBRIDGE • DETROIT 26, MICHIGAN



*Today's Finest  
Oil Burning Equipment*

IS SOLD BY THE

**INDEPENDENT  
FURNACE DEALER**

*Only*



**PREMIER  
Model RX-8**

Completely self-contained, fully automatic. Extra large heat radiating surface assures high efficiency and economy. Up to 117,600 B.T.U. Quiet in operation, very good looking.

Almost everybody seems to want oil heat these days, and PREMIER Dealers are very busy indeed, making sales and installations.

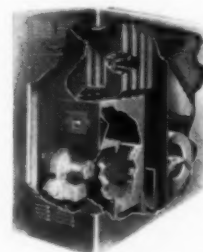
Equally important, PREMIER Dealers are building sound future business for themselves. They are selling the best made, most efficient oil-burning equipment on the market. They are making first-class installations. They are creating friends and satis-

fied customers, as well as banking profits.

Perhaps YOU, too, would like more profits today, and a more secure tomorrow. If you are an aggressive Independent Furnace Dealer — if you are willing to give, as well as receive cooperation, you may be able to qualify for the PREMIER Exclusive Dealer Franchise.

**Model RX-4**

Vertical type, for utility room installation. Extra heavy, steel body with more than 5,000 sq. in. of heat radiating surface.



**Model RX-5**

Completely automatic oil-burning winter air conditioner rated at 85,000 B.T.U. Unusually compact, occupies less than 11 sq. ft. of floor area. Quiet, efficient, handsome.

**PREMIER FURNACE COMPANY**

Heating . . . Air Conditioning  
. . . Automatic Fuel Burning . . .  
and Cooling Equipment



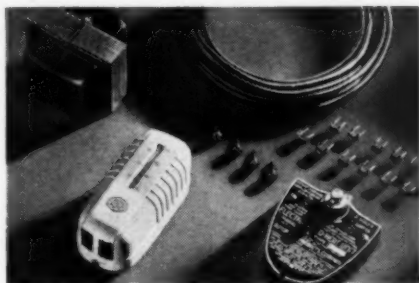
Factory and  
Office at  
Dowagiac, Mich.

# There's 'Gold' in your Oil Heater Customer Lists!



## 1 A-P Thermostat Comfort Kit

A-P Thermostat Comfort Kit Adds AUTOMATIC Temperature Control convenience to any heater made since 1939 — now using A-P Model 240-D, U or Y series Manual Controls. Saves Oil. Ends wasteful overheating. Complete sales package includes: sensitive modern wall Thermostat, Conversion Top for mounting on present control, Transformer, wiring and accessories. Easy to install.



## 2 A-P OILIFTER

Automatically supplies fuel oil to room heaters, water heaters, furnaces and kitchen ranges — All vaporizing oil burning appliances. "Lifts" oil as high as third story from bulk storage tank outside or in basement. Ends oil handling, spilling, wastage.



## 3 A-P Fuel Oil TRAP-IT

Improves heating, efficiency by trapping all dirt, sludge, gum, moisture in oil lines. Saves service expense.



Make easy "check-back sales" of these popular



## AUTOMATIC OIL CONTROL ACCESSORIES

EVERY Oil Heater sold since 1939 can be the source of EXTRA SALES and profits for you right now! Dig out your old files, check them over carefully, give them to a telephone girl to make sure the addresses are right and that they're still using your heater. Then parcel out the names to your salesmen and arm your men with "sales ammunition" on A-P AUTOMATIC OIL CONTROL ACCESSORIES. You'll be surprised how easily you can turn over extra sales and profits on these old friends of yours . . . and sell new heaters to them, too!

**Sell ONE or ALL THREE**



Folders for mailing Consumer Catalogs, Direct Mail Broadsides, Newspaper Ad Mats, Oil Control Tags.

Write Now for Complete "Sales Ammunition" available . . .



"Album of Famous Vaporizing Oil Burning Appliances", 15-Minute Slide-Sound Film Available for dealer and salesman showing.



## DEPENDABLE OIL CONTROLS DESIGNED TO ELIMINATE SERVICING AUTOMATIC PRODUCTS COMPANY

2452 NORTH THIRTY-SECOND STREET MILWAUKEE 10, WISCONSIN

Reap this "Gold"  
NOW . . .  
Return the  
Coupon TODAY!

Enter our order for immediate shipment of:

..... A-P Model 240-ED Thermostat Comfort Kits . . \$22.97  
..... A-P Model 246 Oilifter . . . . . \$34.48  
..... A-P Model 243 Fuel Oil "TRAP-IT" . . . . . \$ 3.50  
..... (Less discount)

Name . . . . .

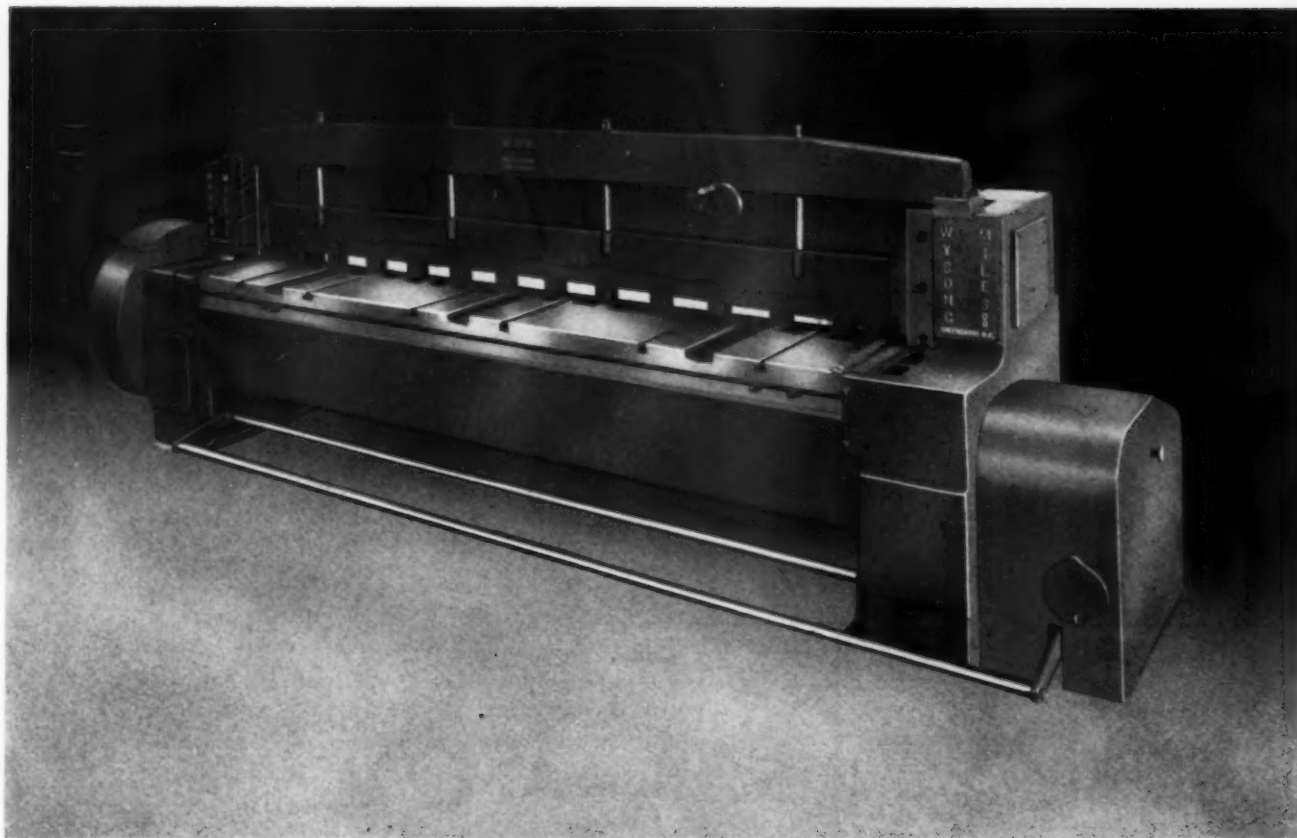
Address . . . . .

City . . . . . State . . . . .

Signed by . . . . .

Our Jobber . . . . .





Capacity 10 Foot, 10 Gauge, Mild Steel

## 9 reasons why everyone in the plant likes THE WYSONG & MILES No. 10-10 SHEAR

Sound engineering has produced an accurate, high production shear for less money. The No. 10-10 takes the toughest shearing jobs in stride and is shipped completely equipped, ready for continuous capacity operation. Rugged construction and precision features insure accurate cutting plus economical operation. The following features are standard.

**1. Massive construction . . .** Semi-steel castings with a high steel content are made in the modern Wysong and Miles Foundry to carry greater stress than required for continuous capacity loads. By being underdriven, weight is low and the shear has rigid stability.

**2. For accurate shearing . . .** The bed is squared with the end frames in all directions. Holddown and knife-bar travel is true because ways are hand-scraped for perfect bearing and are squared with the bed. Solid, standard alloy steel blades with 4 cutting edges, backed by massive knife-bar, cut straight, cleanly and accurately.

**3. Front-operated back gauge . . .** It accurately adjusts to .0078 (1/128th) of an inch by turning the handwheel conveniently located on the front of

the shear. This gauge saves many steps and increases production.

**4. Positive compensating holddown . . .** Individual spring actuated plungers in each foot firmly clamp sheets of varying thicknesses and small strips without adjustment.

**5. 9-Jaw Clutch . . .** Built of hardened, forged alloy steel for long life, the jaws mesh smoothly, engage instantaneously, and the load is distributed equally over all 9 jaws. A twist of the wrist sets the clutch for single stroke or continuous shearing. Wherever this Wysong and Miles designed clutch is in use, it continues to give trouble-free service.

**6. Self-lubricating eccentrics . . .** For thorough lubrication and cool operation, on each revolution, eccentrics are bathed in a reservoir of oil contained within each end frame.

**7. Cam-operated brake . . .** Since brake engages only to hold the knife-bar in the top position, there is no drag on the balance of the stroke. Powerful counterbalancing springs aid in returning the knife-bar smoothly to the top position.

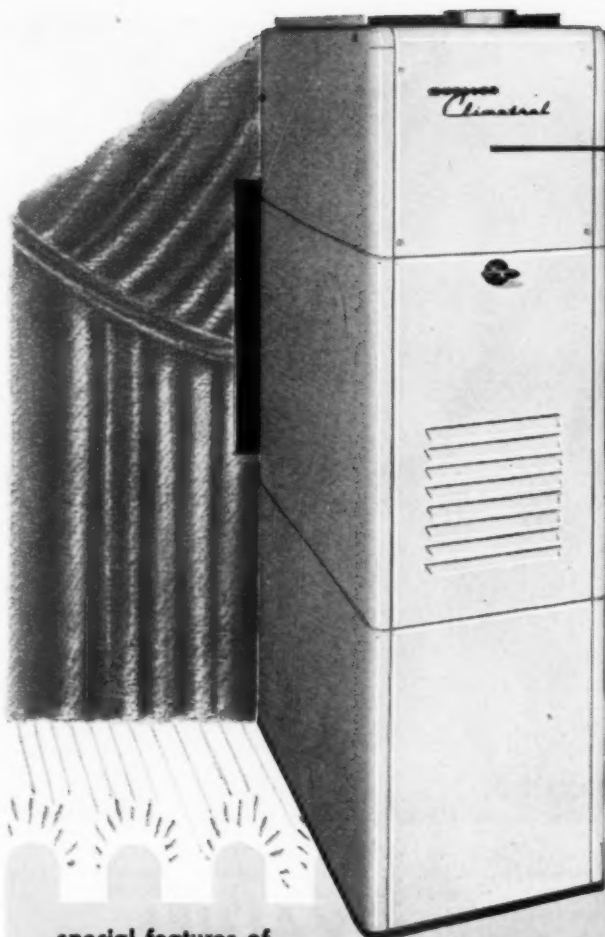
**8. Testing and guarantee . . .** Before leaving the factory, each shear is thoroughly tested with an automatic trip for 24 hours of operation. Each shear is shipped in perfect operating condition and each shear is backed by a year's guarantee.

**9. Economical . . .** You'll be pleasantly surprised at the low cost of the No. 10-10 shear. 100% jig and fixture construction, plus simplicity of design means easy maintenance, making the No. 10-10 economical in operation . . . truly a great shear value.

**Write for Catalog No. 22** giving full information and specifications on the Wysong and Miles line of Sheet Metal Machinery . . . Squaring Shears, Power, Air and Foot operated; Slip Roll Formers and Rotary Combination Sheet Metal Machine.

**WYSONG and MILES Co**

633 FULTON STREET  
GREENSBORO, N. C.



*another* **NEW**

# Mueller Climatrol fuel-thrifty Furnace

... the compact Type 110 Gas-Fired  
Winter Air Conditioner

**Engineered and designed to get you more  
sales from new low-cost housing and  
individually-heated apartments**

The Mueller Climatrol dealer is always out in front in his market — *and in every part of his market.* This new Type 110 Gas-Fired Winter Air Conditioner is a prime example. It is small enough for closets, utility rooms, or basements . . . available in gleaming white enamel or Mueller Climatrol green . . . and competitively priced!

It gives you everything you need for the small-home, individually-heated apartment, and housing-project market. It gives you performance, design, and appearance — tailor-made to this specific market. And you know that's where a terrific volume of sales is coming from in the next year or two.

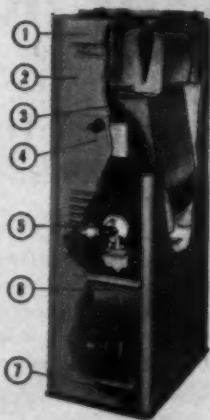
Look at the features of this new furnace. Think of the selling job you can do with this ammunition. Get behind it — and you're sure to come out with bigger profits.

Yes, the new Type 110 can be proudly added to the line of Mueller Climatrol profit-makers which have been developed through 92 years of building top heating equipment. Whether it's gas, oil, or coal — the Mueller Climatrol dealer is away out in front. Write for complete details on the new Type 110 or other equipment in the complete Mueller Climatrol line. *L. J. Mueller Furnace Company, 2010 W. Oklahoma Ave., Milwaukee 7, Wisconsin.*

## special features of

### New Type 110 Gas-Fired Winter Air-Conditioner

1. Beautiful Cabinet — available in handsome crinkle green, or gleaming white to match kitchen and laundry appliances. Controls are enclosed.
2. Compact Size—60,000 and 80,000 Btu input capacities in compact, deluxe hi-boy cabinet.
3. Efficient Heat Exchanger — all-welded steel, with upward air-flow over abundant heat transfer surface assured by thermodynamic design.
4. Easy Cleaning—all parts including blower, motor, controls, burner, and heat exchanger are accessible from front through easily-removed door and panel.
5. Fuel-Thrifty Burner — durable cast-iron type with individually drilled ports. Single-port air-shutter prevents clogging.
6. Quiet Blower—mounted on "live" rubber to eliminate vibration and noise. Multi-blade fan driven by continuous-duty, long-life motor.
7. Filters — mounted in base when return air is brought up from below. Side filter rack is available for return through side or back panels.



B-93

**MUELLER**

*Climatrol*

REG. U.S. PAT. OFF.



FOR GAS



FOR OIL



FOR COAL



## Choose the Leader . . . For **VALUE!** CHEVROLET ADVANCE-DESIGN TRUCKS



From one end of the nation to the other, more truck users buy Chevrolet trucks than any other make. Chevrolet trucks offer more of what truck users want—more power combined with economy . . . more comfort and convenience . . . greater ease of handling . . . more value from start to finish! And to all these advantages you can add the biggest premium of all—3-WAY THRIFT! Here's the one truck that combines low cost operation, low cost upkeep and the *lowest list prices in the entire truck field!*

CHEVROLET MOTOR DIVISION, General Motors Corporation, DETROIT 2, MICHIGAN

### Chevrolet Trucks alone have all these features

Chevrolet's 4-SPEED SYNCHROMESH TRANSMISSION offers quicker, quieter and easier operation in Series 3800 and heavier duty trucks. Faster shifting maintains speed and momentum on grades.

Chevrolet trucks have the famous CAB THAT "BREATHES"! Outside air is drawn in and used air forced out! Heated in cold weather.

Chevrolet's power-packed LOADMASTER ENGINE provides improved durability and efficiency in Series 5000 and 6000 models as well as the world's greatest economy for its size!

Chevrolet Advance-Design brings you the FLEXI-MOUNTED CAB,

cushioned on rubber against road shocks, torsion and vibration.

Chevrolet's exclusive SPLINED REAR AXLE HUB CONNECTION adds greater strength and durability to heavy-duty models.

Uniweld, All-Steel Cab Construction

- Large, Durable, Fully-Adjustable Seat
- All-Round Visibility with Rear-Corner Windows\*
- Heavier Springs
- Super-Strength Frames
- Full-Floating Hypoid Rear Axles in the 3600 Series and Heavier Duty Models
- Specially Designed Brakes
- Hydrovac Power Brakes in Series 5000 and 6000 Models
- Standard Cab-To-Axle Length Dimensions
- Multiple Color Options.

\*Heating and ventilating system and rear-corner windows with de luxe equipment optional at extra cost.

**CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED!**





THERE'S STILL TIME TO WIN

**\$1,000 FOR A NAME**

**We'll pay you to name this history-making  
NEW KO-Z-AIRE**

You can still enter this exciting contest . . . still win one thousand dollars in cash for naming the new KO-Z-AIRE, the latest, greatest home heating development in years. Just send in a name and tell why you think it should win, in 25 words or less. Read the rules now, then send as many entries as you wish. Don't delay! Do it today!

**THESE RULES ARE SIMPLE!**

1. The contest is open to any resident of the United States employed by, or acting as, a recognized dealer, jobber or contractor engaged in the sale or installation of forced warm air heating equipment—or members of their immediate families.

2. Each entry must be written on one side of the stationery or statement of such a dealer, contractor or jobber—or on forms supplied at the Heating and Ventilating Exposition. There is no limit to number of entries each contestant may submit, but each must legibly contain the following information: The name you suggest, and not more than 25 words describing the reason for your choice; in lower right hand corner, print Name of Contestant, Address, City, Postal Zone, State and Telephone Number, if any. (Names of contestants will be withheld from judges.) KO-Z-AIRE assumes no responsibility for delivery of any entry, but all will be acknowledged promptly.

3. No entry postmarked later than midnight, April 10, 1949, will be considered. Mail all entries to Contest Editor, Jones &

Brown, Inc., 439 Sixth Avenue, Pittsburgh 19, Pennsylvania.

4. Entries will be judged on merit and availability of the suggested name as a trade name, and on the worthiness of the 25 word statement. Plainness and clarity are important. All entries become the property of KO-Z-AIRE, Inc., and none will be returned.

5. In the event of identical names being chosen as winners and where the 25 word statements accompanying each are judged to be of equal merit, duplicate prizes will be awarded. Judges will be representative authorities of the warm air heating industry and their decisions final.

6. No employee of Jones & Brown, Inc., KO-Z-AIRE, Inc., their advertising agencies or publications in which these advertisements appear will be recognized as a contestant.

7. This contest is subject to all federal, state and local laws.

8. Winner will be advised by mail on or before May 15, 1949, and his or her name, along with the winning entry, will be announced in the May issue of this magazine.

**Contest Closes  
April 10, 1949**

This new KO-Z-AIRE is the most compact and easily installed heating unit ever built. It's only 36 1/2" high, 23" wide, 39" deep . . . yet delivers a heat output of 83,200 Btu. Blower blade assembly is surrounded by circular heat exchangers. Automatically gas-fired with oversize filters. Approved by AGA, delivered ready to install. Shipping weight, approximately 250 lbs. Naming it will be easy!

*Nothing  
To Buy!*



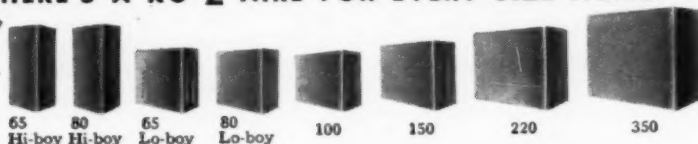
**KO-Z-AIRE**

**JONES & BROWN, INC.**

439 SIXTH AVENUE • PITTSBURGH 19, PA.



THERE'S A KO-Z-AIRE FOR EVERY SIZE HOME



# NEW 200,000 BTU



## OIL-FIRED SUSPENDED FURNACE

Companion model of the Gilbarco 100,000 BTU Suspended Unit, this new furnace of double the capacity will more than quadruple the opportunity for sales of suspended installations.

The tremendous demand for suspended furnaces has been proven by the smaller 100,000 BTU model, introduced several months ago. Now with this new unit the avenue is open to the hundreds of thousands of stores, schools, garages, service stations and similar buildings which require greater capacity than the 100,000 BTU Furnace can supply.

The dealer who doesn't carry a line of suspended furnaces is missing out on the units in which interest is keenest in the oil heating field today. Why not get into this profitable market? Write for full information on the Gilbarco Suspended Furnaces of 100,000 and 200,000 BTU capacity, both equipped with the exclusive feature that makes selling easy—the famous fuel-saving Economy Clutch.

*Gilbarco*  
THE OIL BURNER WITH  
THE ECONOMY CLUTCH

Gilbert & Barker  
Manufacturing Company  
West Springfield, Mass.,  
and Toronto, Canada

CONVERSION AND REPLACEMENT BURNERS • BOILER BURNER UNITS • WARM AIR CONDITIONERS • INDUSTRIAL BURNERS



## *The brand most in demand...*

While more and more galvanized steel sheets are coming, it is still not easy now to get all you want . . . just when you need them.

But you dealers, metalworkers and sheet metal contractors who have worked with U·S·S Galvanized Steel Sheets are in better position than some of your competitors. Many of your customers, knowing how much better U·S·S Galvanized Steel Sheets are, would rather wait until you have the stock to take care of their needs

properly . . . than to turn impatiently to sheets of unknown quality.

It's this insistence on top quality . . . this loyalty to a dependable product, that helps you hold your customers during periods of scarcity . . . that helps you build up a bigger business when materials are plentiful. So keep asking for these easier-to-fabricate, good-looking, long-lasting sheets. You can be sure that your supplier will let you have all he can . . . just as fast as he can.

CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO  
COLUMBIA STEEL COMPANY, SAN FRANCISCO  
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM  
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST  
UNITED STATES STEEL EXPORT COMPANY, NEW YORK



# U·S·S STEEL SHEETS

UNITED STATES STEEL

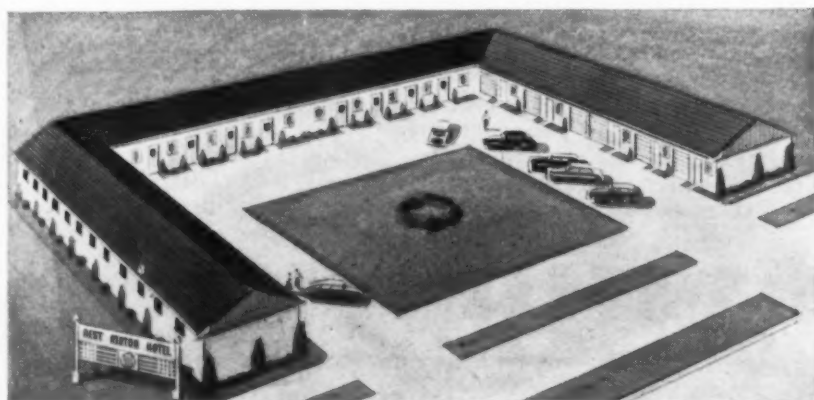
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"Guests like the *Head-to-Toe Comfort*  
provided by BRYANT Radiant-Panel HEATERS"



\*At A.A.A.-recommended Rest Motor Hotel, located on busy Ohio Route 8, each suite is equipped with a fully-automatic Bryant Radiant-Panel Heater with individual thermostat control.



says W. G. Patterson,  
Owner-Operator  
of Rest Motor Hotel,  
North Randall, Ohio\*



"These smart space savers are a real attraction. Guests often remark about the cheerful comfort they afford. As for us, we've found them easy to have installed, and—best of all—mighty easy on our overhead."

● Here's the gas-fired radiant-panel heater that's at home anywhere—in living room, bedroom, bathroom, cottage, office or recreation room. It's made for year-round service or auxiliary heating, provides two kinds of heat: the *quick*, penetrating warmth of radiant rays and the satisfying comfort of gently circulated warm air.

There's no cutting of floors or floor coverings. The 5½-inch slenderness of this ivory-hued beauty fits flush against the wall, mounts easily with four screws applied to studding. Sizes: 15,000 and 20,000 Btu capacities for natural, mixed, manufactured and LP-Gases; 25,000 for all gases except LP. A.G.A. approved. Manual or automatic control.

Bryant Radiant-Panel Heaters provide these features: "RUFFLED-PORCELAIN" ENAMELED STEEL HEAT EXCHANGER for increased radiation, instantaneous response.

QUIET, MULTIPLE-DRILLED CAST IRON BURNER, operated by Bryant Model H Pilot for automatic control, constant-burning non-thermal for manual, 100% shut-off for LP-Gases.

BUILT-IN DRAFT DIVERter, completely enclosed by steel cabinet.



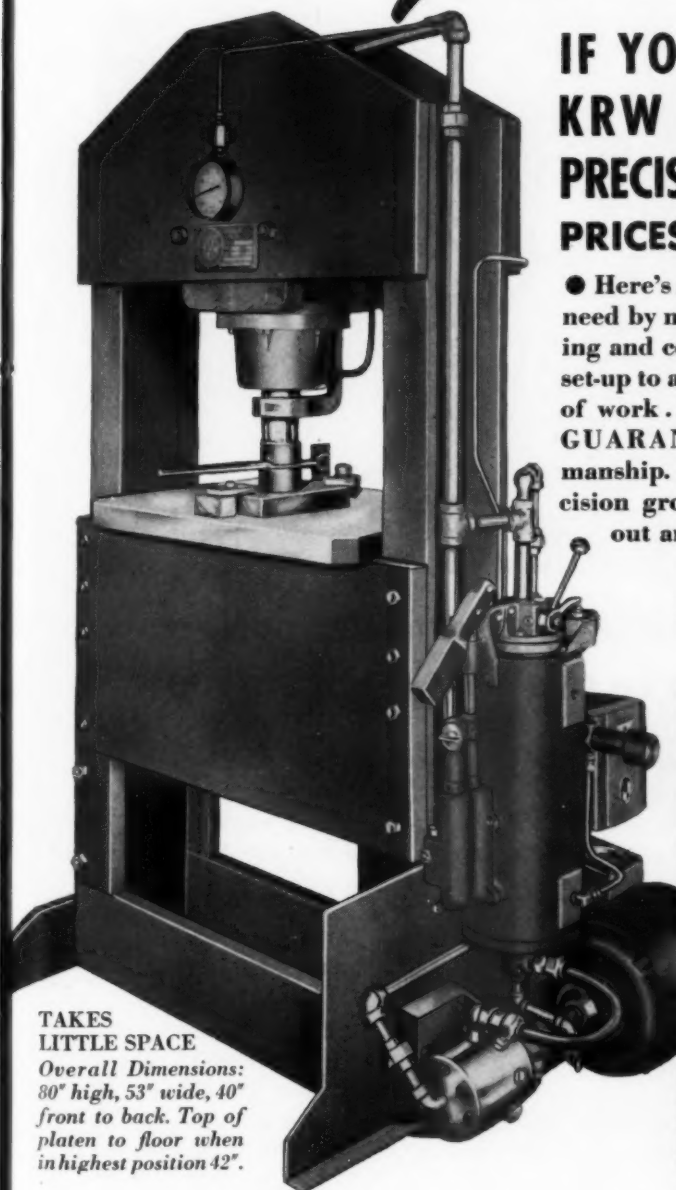
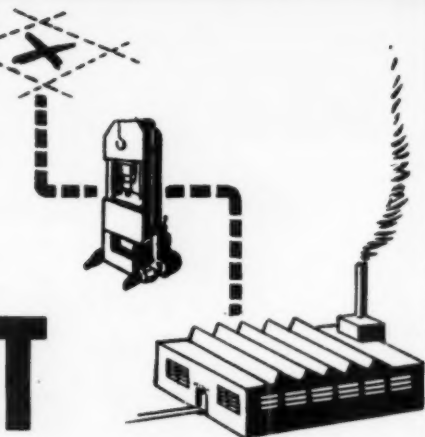
Let the pup be furnace man  
... and water boy, too!

**bryant**  
AUTOMATIC HEATING

BRYANT HEATER COMPANY  
Cleveland, Ohio • Tyler, Texas

AMERICAN ARTISAN, March, 1949

# There's a PLACE--- for this PRESS in Your PLANT



**IF YOU WORK WITH METAL, THIS NEW KRW FORGING AND FORMING PRESS IS PRECISION-BUILT FOR LONG OR SHORT RUNS PRICES\* RANGE FROM ONLY \$1850 TO \$1910!**

● Here's a brand new dual purpose Hydraulic Press that fills a long felt need by many plants. This new 75-ton press can be used on many forming and cold forging or pressing operations. It is easily shifted from one set-up to another; can be used with inexpensive dies to do a wide variety of work... relieving heavier equipment for other work. The press is **GUARANTEED** for ONE YEAR against defects in material or workmanship. Here are some of its features: adjustable bed, platen is precision ground. Equipped with 2-speed built-in hand pump for die try out and delicate pressing. Mechanite Cylinders precision machined and honed to mirror finish. Guided ram to prevent ram swiveling. Get the facts about this latest KRW press development. There's a place in your plant where it can save you money.

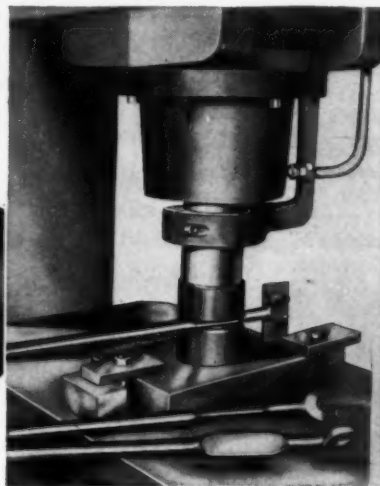


Illustration shows the press being used to cold form an automotive valve lifter.

## BRIEF "SPECS"

Standard Model, Series 3700-F, 75-tons.

6" ID Cylinder, 7¼" stroke.

Platen 30"x 18"x 2", adjustable in 4" steps.

Daylight 6" Min. to 18" Max.

Frame Heavy welded steel.

11" stroke cylinder available in air return or double acting types.

Ram Travel Speed varies from 1" per 3.5 seconds to 1" per 2.6 seconds depending upon capacity of hydraulic equipment selected.

Delivery: Standard models one week.

**TAKES LITTLE SPACE**  
Overall Dimensions: 80" high, 53" wide, 40" front to back. Top of platen to floor when in highest position 42".

\* Depending upon capacity and size of hydraulic equipment and motor required. F. O. B. Factory.

**MAIL COUPON TODAY FOR ALL THE FACTS**

# K·R·WILSON

215 MAIN ST. · BUFFALO 3, N. Y.

K. R. WILSON, 215 Main St., Buffalo 3, N. Y.

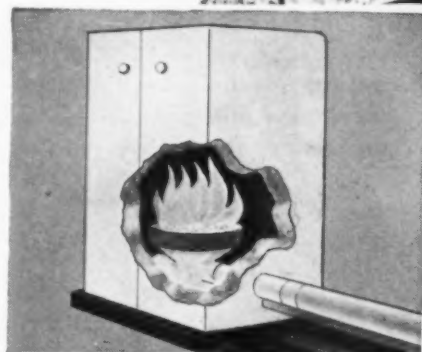
Please quote me prices and information on your new 75-ton Series 3700-F Press.

Name .....

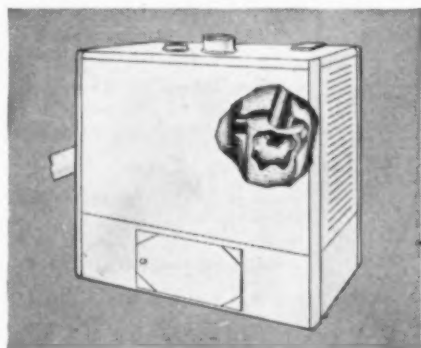
Address .....

City and Zone..... State .....

**Must your Customers  
pinch pennies for  
food and  
WASTE DOLLARS  
FOR FUEL**



**Automatic Anthracite Stokers**—Installed in an existing boiler or furnace and in new houses, automatic hard coal stokers deliver *plenty* of heat quickly . . . save up to 52% on fuel bills . . . eliminate fuel worries.



**The Revolutionary Anthratube**—The Anthratube saves on fuel bills . . . its proved efficiency is over 80%. This scientifically engineered boiler-burner unit, with "Whirling Heat" and other revolutionary features, produces quicker response and superior performance than units using other types of fuel.

**Automatic Anthracite Heat offers  
savings up to 52% on annual fuel bills**

● Here's how you can be a real friend to your customers . . . and build good will plus future business for yourself.

Just ask a few customers if they would rather burn money or Anthracite . . . it's as simple as that.

Then tell your customers how they can offset today's high living costs with completely automatic Anthracite equipment.

You'll find that most people will welcome the chance to save \$100 to

\$200 every year . . . particularly when they learn they can have all the comfort and convenience of completely automatic heat. Moreover you can assure them they will have *plenty* of heat . . . because there's plenty of hard coal now, and for years to come.

• • •

Get complete information about modern coal stokers, and data on the revolutionary new Anthratube, by writing to Anthracite Institute *now*.



**ANTHRACITE INSTITUTE**

101 Park Avenue

New York 17, New York



# Jobs Really Sail-



with  
**Simplenic** \* **simplified**  
**INSTALLATIONS**

WRITE  
TODAY for  
NEW  
**Simplenic**  
descriptive  
price list and  
name of your  
nearest jobber.



Amazingly simple duct size formula (Number of take-off openings) X 2 plus 2" equals proper width for full length of 8" duct



Only 4 types of duct fittings required



30% SAVING in main trunk material



25% SAVING in labor



**CLAYTON & LAMBERT MFG. CO.**  
1760 DIXIE HIGHWAY • LOUISVILLE 10, KY.

**Lamneck**  
TRADE MARK

**FURNACE PIPE  
AND FITTINGS**

# TAPE Speeds Sheet Metal Construction in Washington Building\*



\* U. S. CHAMBER OF COMMERCE BUILDING,  
Washington, D. C. (Mechanical Engineers:  
Urdahl & Everetts; Contractors: W. G.  
Cornell Company; Sheet Metal: Mathy  
Company; all of Washington, D.C.)

Photograph courtesy of Berkley Ball

## NO. 290 TAPE QUICKLY, PERMANENTLY SEALS THESE IMPORTANT FITTINGS



**Faster than solder . . .** cleaner and faster than the old paste-pot method of sealing pipe joints . . . Bauer & Black Tape No. 290 drastically slashed construction time and material costs during recent alterations on the U. S. Chamber of Commerce Building in Washington, D.C.

**No ordinary tape,** No. 290 was engineered especially for sheet metal work. The thermo-setting adhesive actually vulcanizes itself more firmly to the metal under operational temperatures. And the tough, super-strong Fiberglas\* backing is lastingly heat-resistant.

**Bauer & Black Tape No. 290** comes in convenient rolls  $1\frac{1}{2}$ " x 36 yds. Just strip the tape around the seam, cut from the roll, and the seam is complete, permanent, and leakproof . . . *all in less than 15 seconds.*

**Tape No. 290** adds to structural strength, too! It's cleaner, quicker, cheaper, more permanent. Amazingly efficient! For more details, phone your jobber . . . or write Department T9-3.

\*Reg. U.S. Pat. Off.  
(By the Owens-Corning Fiberglas Corp.)

A product of

# BAUER & BLACK

Division of The Kendall Company, 2500 S. Dearborn St., Chicago 16

## Industrial Adhesive Tape

PRESSURE SENSITIVE

Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods



MR. R. D. STIEHL CO-OWNER OF  
H & S BOWLING ALLEYS IN  
AU GRES, MICHIGAN

"I intended originally to install wet heat...

...but after receiving estimates on such systems I investigated warm air heating and asked the same contractor (who was the low bidder on the wet heat installation) to estimate the entire job for forced warm air heat and in so doing saved \$800.

Actually our savings will run much more than that because ... when we install a summer air conditioning system we will be able to use the ductwork of the heating plant and thus eliminate this feature for the air conditioner.

Air diffusers in the ceiling give an even heat throughout, and there are no heating units suspended from rafters or side walls to detract from the appearance of the interior decorations.

Mr. Edward Tarnosky of the Au Gres Plumbing and Heating Company, estimated both jobs and installed a Jackson & Church oil fired furnace, Model OL-48 with an output of 380,000 Btu's per hour.

My fuel consumption is low, and ... the bowlers are comfortable because we have the added features of: 1.- frequent air changes, 2.- ample humidification, and 3.- filtered air. My partner, Mr. Roy Holland and I are very glad that we did not overlook the advantages of forced warm air heating." \*

\*Statement of Mr. R. D. Stiehl on file with Jackson & Church Company

*Memo: You too can save by installing forced warm air heat. See your nearest J&C dealer or write us at Saginaw.*

**"I SAVED OVER \$800  
by installing  
forced warm air  
heating"**

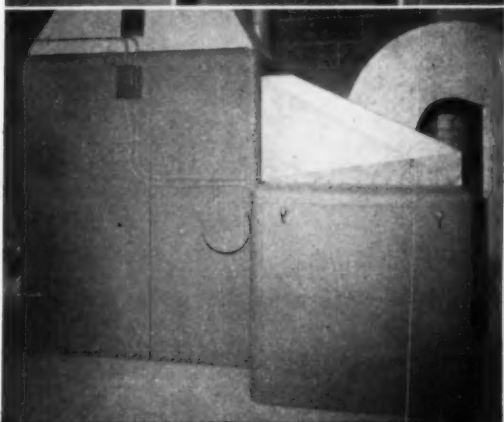
New H & S Bowling Alley in  
Au Gres, Michigan



Interior view of H & S Bowling Alley (note improved appearance due to absence of suspended heating devices.)



Heating installation showing J & C PowerRated Model OL-48 with output of 380,000 Btu's per hour. Installed by Mr. Edward Tarnosky owner of the Au Gres Plumbing and Heating Company.



AMERICA'S LARGEST AND MOST  
COMPLETE WARM AIR HEATING LINE



PRODUCT OF  
**JACKSON & CHURCH CO., SAGINAW, MICHIGAN**

"WORK WELL DONE SINCE '81"

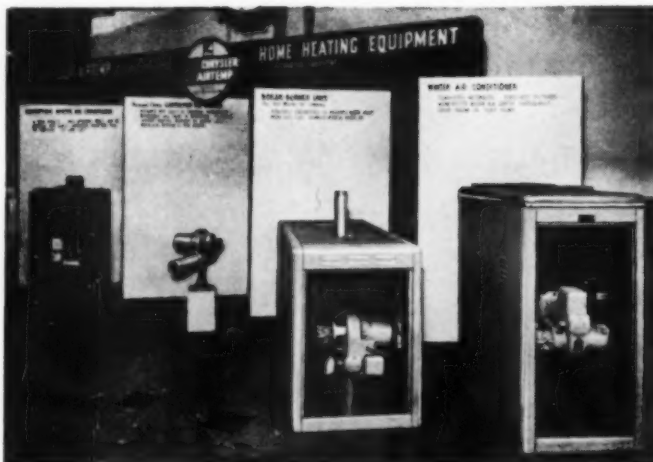


## "THE AIRTEMP LINE

OFFERS A

*Very  
Valuable  
Franchise!"*

—says Pres. W. J. Heggie,  
S. S. Fretz, Jr., Inc., Philadelphia, Pa.



● "Chrysler Corporation enjoys a world-wide reputation for building fine products," continues Mr. Heggie, whose company has handled the Airtemp 4-season line for years. "A leading reputation builds confidence and makes the selling job easier. Then, team up reputation with *repetition* through extensive national and local advertising, and you have a combination that adds up to GOOD PROFITS every season of the year!"

You build soundly when you build a business on a famous manufacturing name. And you build wisely when you plan for profits the year 'round by handling a 4-season line. Chrysler Airtemp offers to a limited number of dealers the few select franchises which are still available. Investigate without further delay—mail the coupon today for details, and discover how the Chrysler Airtemp "Basic 6 Factors Essential For a Profitable Dealership" give you a real assurance of profitable business ahead. Mail coupon without delay.

*Mail Today for Details!*

AIRTEMP DIVISION OF CHRYSLER CORPORATION  
DAYTON 1, OHIO

Please promptly send details on the Airtemp "Basic 6"

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Address \_\_\_\_\_  
Phone \_\_\_\_\_  
Kind of Business \_\_\_\_\_

AA-3-49



AIRTEMP DIVISION OF CHRYSLER CORPORATION  
DAYTON 1, OHIO

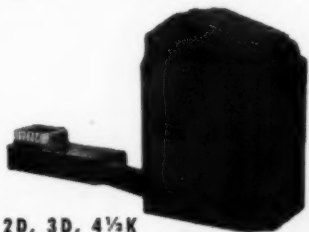
In Canada: Therm-O-Rite Products, Ltd., Toronto

**Chrysler  
Airtemp**

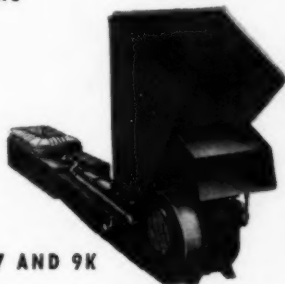
AIR CONDITIONING • HEATING • COMMERCIAL REFRIGERATION

**STOKER SALES ARE *up 20%***  
**BUT...THEY'RE SHOPPING BEFORE THEY BUY**

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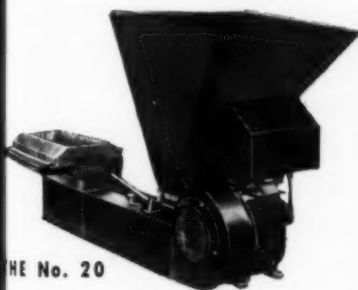
THE 2D, 3D, 4 1/2 K  
 IMPERIAL



THE 6, 7 AND 9K

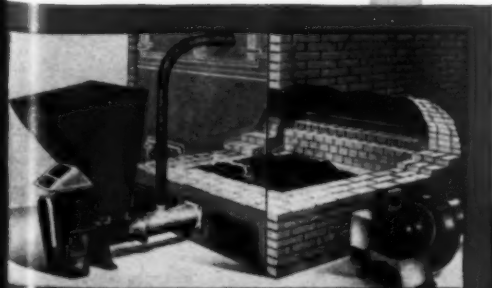


THE 12 AND 15FA



THE No. 20

IN FEED—3 MODELS



## TO MEET THIS BUYERS' MARKET SELL A PRODUCT WITH A PLAN

To compete successfully in a "buyers' market" you want a line that is complete, that has quality, beauty, rugged construction and models for every job. FireTender, with the exclusive "Econo-Mixer," gives you all of these PLUS a complete, new factory Selling PLAN that you can afford, individually adapted to your organization to make you more money.

**FOR MORE SALES  
 SELL FIRETENDER!**

- Minimum Unit Profit \$80
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- Established Credit Item
- \* Plus a SELLING PLAN

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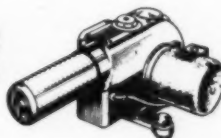
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**SALES AND MERCHANDISING HELPS**  
*which build your Sales, Multiply your Profits*

Easel Presentation. "How to Sell FireTender" book. New Literature, Cooperative Advertising, Newspaper Mats, New Electric and Clock Signs, Direct Mail, Radio Scripts, Demonstration Equipment, Novelties, Window Streamers. Factory and Field Sales Training. Contests. Potential Sales and Profit Data... and

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 WAY TO PROFITS WITH THE FIRETENDER PLAN**

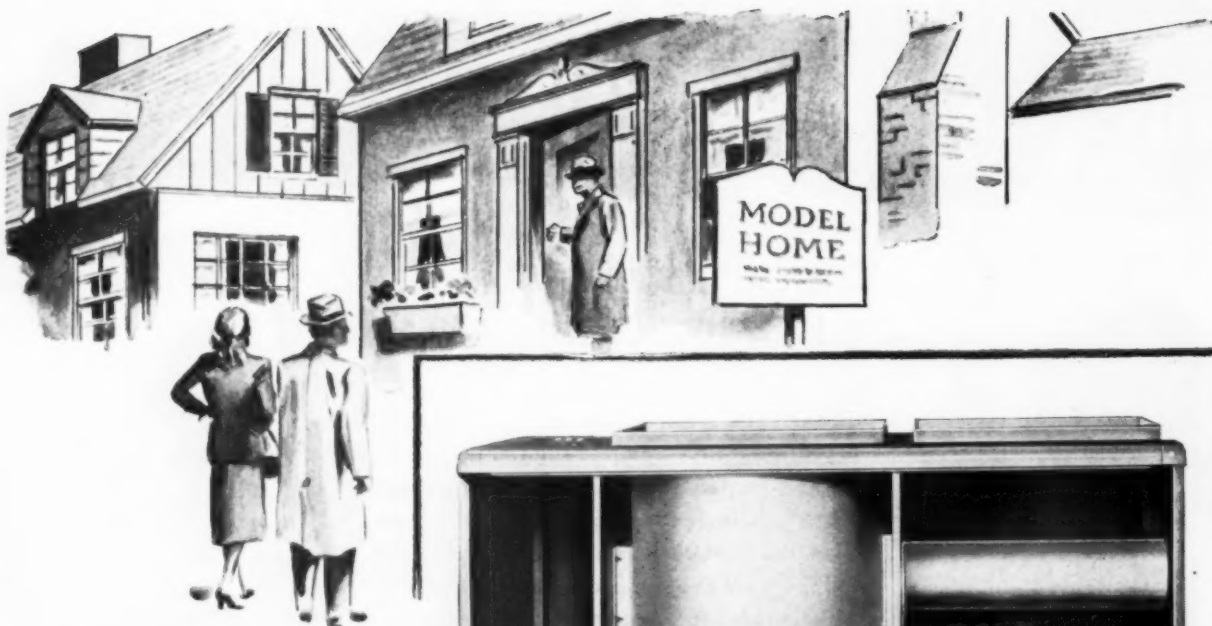
**FIRETENDER  
 OIL BURNERS**



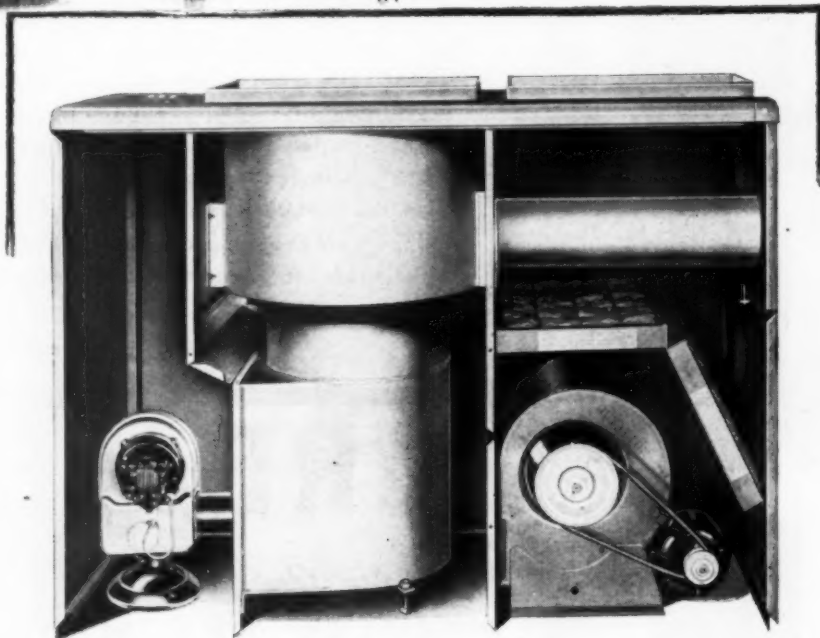
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 THE WAY TO BIGGER PROFITS IN TODAY'S BUYERS' MARKET

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Give them  
quality plus  
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warm air  
heat —



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INCORPORATING the famous Fitzgibbons principle of "Contra-Flo" circulation, which wipes all the heat off the radiating surfaces. . . . Providing the enduring strength of heavy gauge steel . . . Fabricated with Fitzgibbons "Weldseal" construction, gas-proof and soot-tight. . . . Quietly circulating air, humidified automatically to a healthful degree, filtered to mountain-top purity, and warmed to human comfort with the maximum saving of fuel.

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# can you

# put it OVER?

what's  
MISSING  
here?

## Perfex

**"PUTS OVER" the name you sell in the  
customer's living room and backs it up with**

**TWIN CONTACT CONTROLS**

**FREEDOM FROM SERVICE WORRIES**

**ADVANCED RESEARCH**

**DEPENDABLE ENGINEERING**

In the home, the name on the controls is frequently understood to be the name of the manufacturer of the heating equipment. If *your name* is not on the controls nameplate:

**Who gets the recommendation of your  
satisfied customers?**

**Who gets the replacement business?**

**Who gets the advertising value?**

Perfex does more than give you the *best controls*—Perfex gives you *the credit*, in your own name, for every successful installation. Your nameplate constantly reminds your customers of the comfort coming from your automatic heat. Perfex helps get you *the business you deserve*—Perfex puts *your name* in the living room.



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MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE MARK NAMES  
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**A COMPLETE LINE OF TWIN-CONTACT CONTROLS FOR ALL TYPES OF HEATING**





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Wheeling has been  
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quality does pay,  
doesn't it?**

**GALVANIZED SHEETS • COP-R-LOY SHEETS • EAVES TROUGH • CONDUCTOR PIPE  
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*Adjustable to Every Humidifying Need*

Thermo-Drip is the adjustable humidifier. Convenient outside finger-tip control permits home owner to regulate for more or less humidity. Every variable in humidifying demands can be met. This flexibility means superior performance. Quantity adjusts to the requirements of large or small families—large or small homes—cold or temperate climates . . . always giving desirable humidity. These great features—built into every Thermo-Drip Humidifier—come to you at no extra cost. Write for free catalog today.

## *Sensational Performance Feature*

### THAT ARE SALES CLINCHERS

- Drip Feed Principle creates balanced atmosphere
- Hot pan surface gives immediate vaporization
- No stagnant pool of water left in pan
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- Valve movement prevents clogging by lime
- Easy to install—fits all types of warm air furnaces

*Automatic*  
**HUMIDIFIER CO.**  
CEDAR FALLS, IOWA





# For Low Cost Homes...

*Why not* USE PART OF  
THE ATTIC FOR THE  
"FURNACE ROOM"  
WITH A GAS-FIRED

*Janitrol*  
**THERM-O-ATTIC  
FORCED AIR FURNACE**

Put the heating in the attic? Yes, it's entirely practical with a Janitrol Therm-O-Attic—the installation works like a charm—we have testimonials to prove it. Now, think of the advantages for low-cost homes, where you want to merchandise all that's modern, but you've got to trim costs without seriously sacrificing quality.

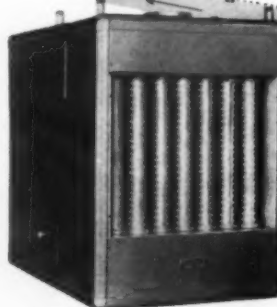
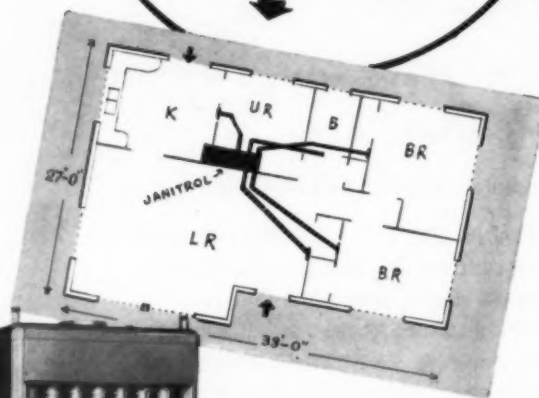
- 1 **No basement** is needed for the heating plant.
- 2 **You don't use up** scarce closet space.
- 3 **Short simple duct systems** cut down installation costs.
- 4 **Grills at floor levels** lead into return air ducts.
- 5 **Heat is comparable** to a more expensive installation of a winter air conditioner.
- 6 **A merchandising plus**—the Janitrol Unit can be operated in summer for attic ventilation to exhaust hot air from rooms.
- 7 **Janitrol Therm-O-Attic** furnaces are complete, factory-assembled and tested packages to further simplify installation.

So, here's the way to show your builder customers and prospects how to put more sales appeal into their smaller homes.

They can sell all the advantages of clean, automatic and economical gas heat, featuring the famous Janitrol name, and at the same time cut their costs. Write today for more complete information about how to get more low cost housing business at an attractive profit.



**IT'S PRACTICAL!  
SAVES INSTALLATION  
COSTS! PROVIDES  
MORE USABLE  
LIVING SPACE**



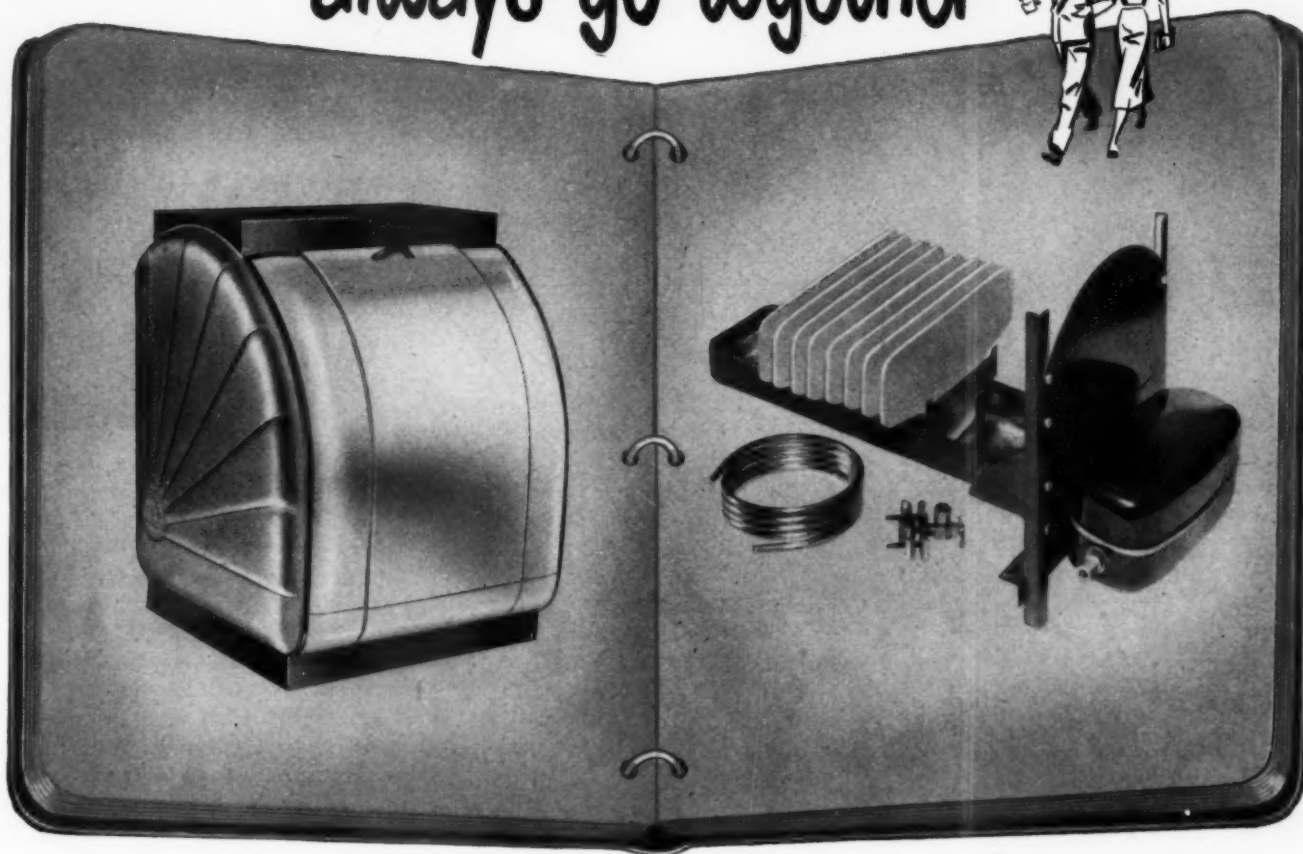
Compact Janitrol Therm-O-Attic Forced Warm Air Furnaces are available in 4 sizes to meet practically every Btu requirement and are equipped for operation with natural, manufactured or LP-Gases.

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Janitrol Winter Air Conditioners, Gravity Furnaces, Conversion Burners, Unit Heaters, Boilers and Triple Service Systems



# BLOWER-PACKAGES and HUMIDIFIERS *always go together*



For best results they should *always go together* on every job . . . the Viking-Blower-Package and Viking Humidifier. This two-in-one deal means a double profit for the dealer and creates greater customer comfort. No kick-backs and no call-backs to spoil your profits. And . . . you don't have to waste your time in shopping around. Just go to one jobber to get both.

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Have you considered stainless steel for sheet metal jobs that call for brightness and long service under tough conditions? You can easily try it because Ryerson stocks of Allegheny stainless are as near as your telephone and we are just as pleased to furnish a single piece of experimental work as a large shipment for regular production.

You'll be pleased with the way Allegheny stainless sheets help you maintain your reputation for good work well done. You'll like their workability. Fabrication is reasonably easy with regular equipment and standard techniques. And your customers will like the low maintenance cost of Allegheny stainless. The mirror-like finish resists corrosion and cleans readily, bright-as-new.

Ryerson engineers will make certain you get the

right type of Allegheny stainless for every job. They're stainless steel specialists whose advice is backed by more than 20 years of Ryerson experience in working with this precious metal of industry.

Call our nearest plant today for prompt delivery. Joseph T. Ryerson & Son, Inc. Steel-Service Plants at: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco.

We would be glad to send you the current Stainless Steel Stock List, showing sizes actually on hand in the following stainless

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Plates  
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# RYERSON STEEL



## Sell Your Scrap to Get More Steel

**I**T HAS been a long time since contractors of this industry could completely satisfy their needs for galvanized steel sheets but there are now signs of this situation being relieved in the foreseeable future, provided the steel industry gets vitally needed scrap. Quality sheets, such as stainless steel, have eased in the past year but the backlog of mill orders for most forms of carbon steel is sufficient to absorb the present high rate of production. While some buyers have stopped buying steel just because it is steel, or have canceled or reduced orders at the mill to conform with their production requirements, others, such as the railroads who have committed themselves to long-range improvement programs and the automotive industry which has not yet caught up with the demand for low priced automobiles, will continue to take huge tonnages to fulfill their needs.

Steel capacity in 1949 is expected to increase to over 96 million tons and the need to utilize this capacity is imperative. This calls for larger quantities of raw material than have ever been assembled by the steel industry. The materials to produce this tonnage come mainly from two sources: iron made in blast furnaces and scrap. About 130 million tons of iron ore will be required to maintain this production, coming out of the mines and moving to the mills according to schedule. More than 50 million tons of scrap will be required, most of which is yielded by the mills in their own operations. If the industry gets the benefit from full operations of blast furnaces in the form of home scrap, a minimum of 18 million tons will need to be purchased. Last year, mill operations did not yield the anticipated tonnage of home scrap and this necessitated the purchase of 25 million tons. This latter caused a shortage in the nation's scrap reserves which needs to be overcome immediately.

The importance of scrap as a chief raw material in making steel is disclosed by the fact that last year it constituted more than half of every article made of iron and steel, the average was 53.3 per cent scrap and 46.7 per cent pig iron. Each year since 1940, the amount of scrap in steel has exceeded that of pig iron.

The shortage of heavy scrap last year limited the output of the steel industry. With more scrap, the

mills could have produced more steel, more quickly. Since last year's record peacetime production did not meet demands of our domestic economy, military requirements, and foreign aid, it is evident that more heavy scrap will be needed to meet the anticipated output this year.

Several factors have contributed to this shortage. During the war, 123 million tons of steel and steel products were shipped overseas and only a fraction of this tonnage will be returned to American mills. Heavy war production drained off and dissipated enormous tonnages of scrap material. Also, a virtual halt has been called on the junking of old vessels and military equipment which until recently has been an important source of scrap. Few items made in the immediate past period of high production have outlived their usefulness and have not yet entered into the cycle that eventually leads to the scrap heap and back to the mill.

For these reasons a critical shortage of the heavy scrap required to maintain steel production at present levels has been anticipated and a drive has been initiated to meet it. In letters to 4,000 business paper editors, officials of trade associations, and chambers of commerce, Secretary of Commerce Charles Sawyer has urged whole-hearted support of the national drive to get scrap into the scrap yards.

"Providing sufficient quantities of heavy scrap to assure maximum steel production is a job that needs to be done," Secretary Sawyer wrote. "Every pound of steel produced can be put to valuable use in our economy. Moreover, we must build up scrap reserves to be able to meet any emergency demands. Although the scrap situation has improved recently, substantial additional quantities must be generated to insure full steel production and accumulation of necessary reserves."

Obsolete equipment, those unused machines gathering dust in the corner, broken or worn parts, fixtures, tools, and furnaces are examples of the heavy scrap that is needed. This is a good time to get these items out of the shop and into channels where they will help to support steel production and be returned in the form of sheets and furnaces.



## Arnold Kruckman's

ASSUMING the plans and the program devised by the U.S. Chamber of Commerce, and the Federal Government (through its Housing and Home Finance Agency) actually come to fruition, \$100,000 will be spent annually for the next five years on building research. The first genial but rather cautious get-together of these forces, which are usually at opposite poles of purpose, took place the middle of February in Washington "to initiate an entirely new approach in the application of industrial research to the problems of building design and construction. The Building Research Advisory Board—BRAB—has been set up by the National Academy of Sciences at the request of over 100 national trade and professional associations with direct interest in construction." The quotation is from a statement issued by the Research Activities Committee of the Construction Industry Advisory Council. The whole business was rather puzzling to those of us here who follow the news and the activities of the people and the organizations in Washington having an effect upon the political and economic trends in construction and building. It had that sort of atmosphere which causes one to wonder what may be behind it. It finally developed at the "press conference" (which was far more than a press conference) that it is virtually an enterprise of the U.S. Chamber of Commerce, coming from the indefatigable energy of F. Stuart Fitzpatrick, manager of the Construction and Civic Development Department of the U.S. Chamber of Commerce. Fitzpatrick, who has been active in this phase of the life of the Capital for years, was publicly given credit for the whole idea by Eric Johnston, once president of the U.S. Chamber of Commerce and still one of its most conspicuous mouthpieces.

### *The Lion and the Lamb*

The most curious aspect of this undertaking is the close liaison which has been developed between the U.S. Chamber of Commerce and the Housing and Home Finance Agency of the Federal Government. It has the appearance of the lion and the lamb lying down together or, if you can imagine, a love feast between the head of the Chinese Communists and Chiang Kai-Shek. In order that there might be no misunderstanding about the fundamentals of this trial marriage it was made clear by spokesmen for both parties that the expedient combination must not be taken to mean that the differences about political philosophies and economic philosophies have abated one iota. The Administration apparently still does not agree with the conservative politico-economics of the U.S. Chamber

of Commerce, and the U.S. Chamber of Commerce does not agree with the socialistic purposes of the Truman Administration, which, of course, is the Federal Government today. But the two groups do believe the same way about a need for an intelligent building program, and they apparently have the same beliefs in the need for more intelligence in the use of the materials and the resources available to implement any building and construction program. This has impelled HHFA to issue a formal statement announcing: "arrangements have been completed for the National Research Council to act in an advisory capacity to HHFA in its research program on building techniques." The same thought was the essence of 25 minutes of an extremely careful and cautious speech made by HHFA Administrator Raymond M. Foley at the luncheon—paid for by the U.S. Chamber of Commerce—which was the conclusion of the extraordinary press conference, a conference which was attended by more architects, engineers, economists, and academicians, than correspondents and press observers. You could gather from Mr. Foley's speech that if any one was so unkind as to think that this ceremonial occasion of the temporary union was the polished sanction of a shotgun marriage, the evil thought was unjustified and abhorrent.

### *Details of Plan and Board*

There was much that was vague and nebulous about the plan, and what is behind the plan to make it tick, but it became clear from the statement made by Dr. Frank B. Jewett, Chairman of the National Academy of Sciences, that the National Research Council, a child of the National Academy of Sciences, is directly in charge of the actual work of prospective research, and in turn is responsible for the more direct activities of BRAB. The actual research and laboratory work is to be done in the facilities, and with the talents, which are under the command of the National Academy of Sciences. There will be a special office, or offices, for the Building Research Advisory Board in the Capital, with a staff, headed by a man who has not yet been selected. Aside from Dr. Jewett, who was introduced as the pioneer in American industrial research, much respect also was paid to C. F. Rassweiler, also introduced as an outstanding industrial research executive. Others identified with the job are Raymond J. Ashton, former president of the American Institute of Architects; James R. Edmunds, Jr., another former AIA president; C. Arthur Bruce of the E. L. Bruce Company; L. M. Cassidy, vice-president, Johns-Manville

# Washington Letter



Sales Corporation; Chris L. Christensen, vice-president, Celotex Corporation; Clyde G. Conley, former president, American Institute of Steel Construction; Frank W. Cortright, vice-president, National Association of Home Builders of the United States; Thomas L. Eagan, president, Heating, Piping, and Air Conditioning Contractors National Association; O. F. Erickson, National Association of Master Plumbers; H. E. Foreman, managing director, Associated General Contractors of America; Robert W. McChesney, president, National Electrical Contractors of America; Gordon P. Marshall, former president, Painting and Decorating Contractors of America; David S. Miller, former president, The Producers Council; H. R. Northrup, vice-president, National Retail Lumber Dealers' Association; Douglas Whitlock, general counsel, Structural Clay Products Institute; Ezra B. Whitman, former president, American Society of Civil Engineers; Eric Johnston, former president, U.S. Chamber of Commerce; Richard Gray and Herbert Rivers, Building Construction Trades Department, American Federation of Labor; Harry H. Steidle, Prefabricated Homes Manufacturers' Institute; Charles Stewart, National Association of Real Estate Boards; Paul V. Betters, United States Conference of Mayors; Norman Altman, National Association of Housing Manufacturers; J. Olney Brott, D. J. Needham, American Bankers Association; Oscar R. Kreutz, National Savings and Loan League; James Rouse, Mortgage Bankers Association of America; and representatives of the Veterans Administration, Department of Agriculture, Reconstruction Finance Corporation, Department of Commerce, and Department of Labor.

There were not present representatives of either the Senate or the House. There is much speculation here about the effect of this movement, to bring the Federal Government and the construction industry together in close harmony, upon the public housing legislation now under discussion in Congress.

## **Housing Hearings End**

The committees in the House and the Senate have concluded hearings on the public housing bills and expect to be able to report the legislation on the floor of the Congress early in March. This legislation, which is guaranteed to raise blood pressures almost wherever introduced for discussion, is known as Senate Bill No. 138, and will become law as the "Housing Act of 1949." It is a fat 63-page document, introduced by Senators Ellender, Wagner, Maybank, Sparkman, Myers, Hill, Pepper, and Long. It obviously no longer is the TEW bill. They don't want Senator Taft's name on it. The

Democratic leadership makes all legislation without the benefit of Republican identification and association. You never know what will happen in this contemporary world, and you particularly are extending that well known stem for your head if you predict what Congress or any of these medicine-makers in national capital politics may do. But this observer is willing to assert that in spite of fireworks and acidulous debate the housing bill will be enacted substantially as written, with speed and dispatch. The chief hope of its opponents lies in the House, where the fight will undoubtedly be hot. Most of the mole-work against the bill is now in progress over on the House side of the Capitol.

## **The Wagner Problem**

There are many fantastic aspects of this legislation, not the least of which is the use of Senator Wagner's name. The New York senator, who was born in Prussia, has not been in the Capital for months. He is very ill; so ill, we are told, that he is not able to transact even the least troublesome personal business. Every once in a while we hear that he is scarcely conscious of what is happening around him. Of course, Senator Wagner is kept in his job much as they kept Senator Glass in the office in Virginia in spite of the protests of the voters, and the suits brought to vacate his office. Up in New York the Democrats fear that if the invalid senator is permitted to quit, Governor Dewey will promptly appoint a Republican; it is even possible he may arrange to take over the office himself. There is something wrong with the arrangement of our government affairs which permits an utterly incapable man to retain the power and the emoluments of one of the most important jobs in the government of the nation.

## **Here Is the Bill**

As drawn the bill proposes that 1,050,000 units of homes shall be built by the Federal Government during the next seven years. This is to cost the taxpayers something over \$19,000,000,000 in direct grants and loans. These funds are to be disbursed during the next 40 years. It will cost the people \$475,000,000 each year to provide these funds. For slum clearance the bill provides an additional \$1,500,000,000 to be spent in grants and loans; and a further sum of \$262,500,000 which the Secretary of Agriculture is to grant or loan to those who wish to build farm structures. All these sums total an aggregate of \$20,762,500,000. You know, of course, that the euphonious term *grants* is simply a

*(Please turn to page 170)*



# Your Showroom Builds Sales

## Modernize it!

DAVID MARKSTEIN  
New Orleans, Louisiana

**Y**OUR showroom is a machine for selling. Like any other machine, it wears out. A good mechanic keeps an airplane engine going for an indefinite number of years by replacing parts as they need replacement—doing a continuing modernization job on the engine. Not all *Indoor Comfort* dealers realize that their selling areas are like an engine; they must be modernized and remodeled to operate efficiently as selling machines.

If you're planning a complete modernization or merely a remodeling, your work should proceed according to a definite plan, and the over-all aim of the plan should be to make your sales facilities a more effective selling machine.

Some *Indoor Comfort* dealers develop an overall remodeling blueprint. Then they do a little of the work at a time, as the budget permits. But by planning at one stroke for all the work, they make sure that the selling showrooms operate smoothly on all cylinders as a good engine should. Instead of pushing in one direction and pulling in another, a well-planned sales-room goes in one direction only—the direction of higher volume and bigger profits.

### Plan It All First

Planning for modernization is not a difficult job if you sit down to do it carefully. One contractor located in the middle-west reports that he spent only about two hours blueprinting a modernization that, a little bit at a time, was accomplished over a year and a half. At the end of that period he had, thanks to his two hours of intelligent planning, a set-up that is one of the most modern in his community, and that is also one of the most effective *Indoor Comfort* selling machines to be found in the United States.

Here is his planning system:

"First," he says, "I listed every part and fixture—shelves, doors, windows, walls, lighting equipment, signs—the works. No part of the place was too small, because a comprehensive selling plan should have each thing doing its job, however small, to promote sales.

"I began with the outside. I looked at the overall face of the building and asked myself these questions: Does it need repainting? Does it need re-finishing? Does it need a complete overhauling in order to make it attractive and inviting?

"In the light of the answers to these questions, I listed needed improvements to make the face of the

Modern merchandising demands that the heating contractor keep his sales showroom as attractive as his his organization can make it. People always like to see what they are buying and if it is displayed in pleasant surroundings the sale is helped.

building an efficient part of my selling set-up. It is useless in my opinion to remodel only the interior. The interior carries the heaviest part of the selling load borne by the physical set-up of the place. But if the exterior is uninviting, there is little likelihood that customers will be drawn inside where the displays can sell them.

"Then I broke down the parts of the exterior. I looked at the outside signs and again asked myself a few pointed questions: How does the electric sign look? Does it flash across its message quickly—and legibly? Is the lighting scheme itself good? Is the sign too small? Or too large? Is it secure or shaky, a potential menace to passers-by? Is it in the right position over the front so that its message is not obscured by competing signs?"

Windows are the eyes through which customers see merchandise and the interior set-up. What about them?

### Check Display Space

"The following step," says this contractor, "was to check the display windows. I found the answers to these questions: What is the condition of the glass itself—is it cracked or marred; have the plates parted and clouded the glass; have years of passing customers left scars on the glass; is it perpetually dirty? Is the overall appearance of the window good? Is it too long or too wide or too deep to allow for effective displays? Would I be better off by installing a backless window reaching to the ground?

"Is the lighting in the window adequate? Can I spotlight the displays in it for punch attention value at night?

"Was it designed so that the glass does not catch the glare of the sun, reflecting objects across the street instead of permitting clear vision through?"

The doors are part of a store's invitation to the customers. This is particularly true of the entrance-way that leads customers into the door. Here is the heating contractor's check list:

"The most obvious question regarding the door and door-way," he reports, "concerns its physical condition. Does it need repainting? Would a modern all-glass door carry out the overall exterior plan better than a wooden door? Is the door too wide or is it too narrow? Are the handles convenient—because with air conditioning the doors stay closed during the summer.

Is the door in the best location where the customers are led into it after being attracted by the outside displays?

"How about the step—would a ramp be more practical and easier for customers? Is the sidewalk in good condition, or is it broken and wavy? A bad sidewalk can influence customers to make a detour.

"After I inventoried the outside and decided upon what should be done to improve it as far as sellability, I turned attention to the interior. It is the interior in particular that most influences sales. In checking over what needed to be done, I relied upon a comprehensive list prepared by the United States Department of Commerce. I found this government list valuable—

**"Floors—check for**

Poor appearance	Unsuitable material
Squeakiness	Unsuitable color
Roughness	Hard to clean
Poor coverings	Undue Moisture

**"Walls and ceilings—**

Poor appearance	Poor color harmony
Poor condition	Partitions needed
Excessive posters	Unnecessary obstruction

**Leaks**

**"Structural obstacles—**

Columns	Low or varying ceilings
Projecting columns	Varying floor levels
Offsets	Floor not on street level
Partion wall	Elevators
Bad angles	Stairways

**"Electric wiring—**

Unpleasantly noticeable
Insufficiently protected
Inadequate for expansion of lighting equipment
Inadequate for present needs

**"Plumbing—**

Exposed
Poor condition
Inadequate

**"Lights and fixtures—**

Poor appearance	Obsolete design
Poor condition	Improper placement
Insufficient illumination	Glare

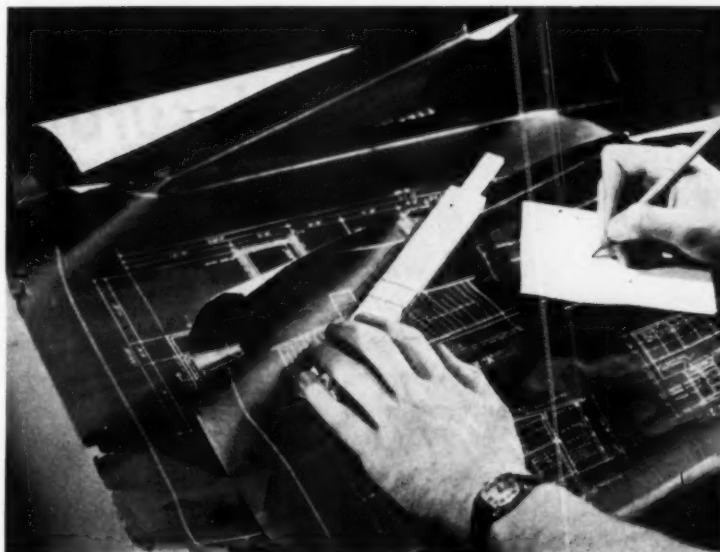
**"Shelves and wall counters—**

Too high	Unsuitable material
Too deep	Unsuitable color
Excessive	Drawers stick
Insecure	Doors hide merchandise

**"Other counters—**

Improper height	Unsuitable color
Excessive	Faulty design
Unsuitable material	Long, unbroken lengths
	Poorly placed."

The *Indoor Comfort* salesroom's front has two functions—to attract the attention of the passer-by and to bring him in. For this purpose, design engineers recommend two plans, angled fronts and backless windows.



Probably the best way to handle your modernization plans is to lay out the entire program and then proceed as time and available money permits.

Step-back angled fronts have an advantage in that they allow a showroom with a short frontage to departmentalize its windows, because the steps form natural divisions. Both styles, straight slanting fronts and step-backs, tend to make a small front look larger. In addition, the backless windows allow more comprehensive merchandise displays; by using them, the entire place becomes one vast window.

Angled fronts take two general forms. They may be one piece set at an angle, meeting the door several feet behind the point at which they began; or they may angle back step by step.

### Color Scheme Important

For the overall color scheme, choose light, cheerful tones. White is losing popularity. Colors such as green, soft blue, and amber are taking its place. The geographical location has a lot to do with which color to choose—in a hot climate, the overall effect of the color job should be cooling—soft greens and soft blues. In cold climates where the customer wants a warm-up before he buys—buffs, beiges, and heat-conscious pinks do the job well.

In picking an overall inside color scheme, it is wise to stick to the softer tones and avoid hard colors such as bright orange, scarlet, yellow, purple. These tend to attract the eye—which means that the customer isn't giving the displays the attention they need.

Color's selling magic works in two ways—the first, to make merchandise easier to see, make it stand out, make the whole salesroom inviting. The second is equally important: to pep up the morale of salesmen.

Eye specialists point out that when light enters the eye, and an impulse is sent from it to the brain, the ease with which the delicate muscles function is governed by the strain put upon them. The oculists have discovered that harsh colors fatigue the eye muscles much more quickly than do the softer tints, and when eyes are distressed, headaches, nausea and nervousness result.

# Liability Insurance And How It Works

WALTER J. FOX  
Insurance Broker  
Chicago, Illinois

**A**S A HEATING contractor, you undoubtedly carry liability insurance to protect you against claims for bodily injury and property damage arising out of your business operations. But are you sure that this policy does the job you intend it to? It is the purpose of this article to help you determine whether or not your present protection is adequate.

## Liability Coverage

In general, the basic liability policy covers accidents on your premises, or away from your premises while your workmen are still on the job. One of the most important exclusions in the basic contractors' liability policy is that applying to the so-called "products" and "completed operations" hazards. This exclusion, in effect, says that the insurance does not apply to any loss caused by the existence of any condition in goods sold, handled, serviced or distributed by you after the goods have left your control and premises. Neither does it apply to claims arising after you have completed service or installation operations.

A heating contractor is not sufficiently covered if his liability insurance includes only hazards within his shop or on a customer's premises. Recent awards for damages have indicated liability extends to the hazards of equipment which may be sold over the counter and equipment which has been completely installed by the contractor in the customer's premises and is in operation.

Products liability and completed operations insurance offers a dual protection. Claims arising from damages caused by equipment which the customer buys over the counter and installs himself are included in the *products* provisions of this insurance. This type of claim is defended and any awards are paid whether the equipment has been proved defective or incorrectly applied.

After the installation of equipment by the contractor is completed, the *completed operations* provisions of the insurance come into effect. Claims arising from damages, whether the result of defects of the equipment or faults of the installation, are defended and any awards granted are paid.

Any number of possible claims can be filed under either the products or completed operations phase of your business. A single claim can involve both, if it is alleged that bodily injury and/or property damage resulted from both a fault in the product and faulty workmanship on your part.

Here is a topic which has been coming to the fore in recent months with a rash of damage suits. This article and another to follow will explain the liability coverage that a heating contractor should have and offer concrete examples of the value of this protection

Consider the following possible sources of claims:

- a) All types of explosions caused by the heating equipment
- b) Malfunction of furnace shortly after a visit by your service man
- c) Failure of safety controls
- d) Fire or smoke damage allegedly due to faulty design or installation

Remember that claims will involve not only bodily injury, but also damage to the claimant's property and loss of use of the property.

## Liability of Seller

You may feel that since you are a dealer or distributor, and not a manufacturer you have no need for the products coverage. This is not the case. The uniform Sales Act which operates in over 30 states penalizes the *seller* for selling any defective merchandise. In other states, the common law is no longer "Let the buyer beware."

In a recent New York case involving a claim for injury resulting from a packaged product sold by a retail store, the storekeeper was held liable even though he could not have had knowledge of the condition of the merchandise. The opinion of the court includes this statement: "The *dealer* is thus charged with liability, though the buyer selects the brand, even as he would be held liable for concealed defects upon a sale of wool or silk." Courts also have held the seller or manufacturer liable even though instructions are furnished with the merchandise. In such cases, the courts held that the instructions were incomplete in that they did not warn of danger resulting from improper use.

## Good Will and Business Reputation

As is the case with any business concern, you are dependent upon the continuing good will of the public for your success. A claim alleging damage to property, or personal injuries due to faulty workmanship or materials, naturally would reflect on your reputation in the community. For this reason also, it is important that you be represented by an insurance company experienced in handling and settling claims of this sort. When a person is injured or his property is damaged, he and his attorney do not decide who will be held liable. That is a question which is left for the courts

(Please turn to 182)



# Overtime on Overtime

## In the Construction Industry

J. G. FINK

L. METCALF WALLING\*

Eidleitz, French, Fink & Markle  
New York City

When the Supreme Court made its rulings on overtime and premium pay in the famous "longshoremen's" cases there was a great deal of confusion in every industry as to what constituted legitimate overtime and what premium payments were for undesirable hours and had to be included in base pay. The Building Trades Employers Association of New York had its legal counsel prepare a special bulletin on the application of overtime in the construction industry. This article is taken from that publication.

TEN years ago last October the Fair Labor Standards Act, sometimes called the Wage and Hour Law, became effective. Recent events compel a re-examination of this law and its application to the building construction industry, some changes in the contractual or customary work week, and perhaps some changes in other long established practices relating to premium time.

### *The Salient Provisions of the Law*

The law fixed a floor under wages and a ceiling over hours of employment at straight time or regular hourly rates. The floor under wages is still 40c an hour. In our industry we may pass quickly from this requirement of the law. The law does not prohibit work during any particular hours in any work week. It provides that in certain covered employments, employees shall be paid time and a half the regular rate for all hours of work in excess of forty during any work week. To the extent that employees of building contractors work in excess of forty hours a week the law does apply with respect to certain employees and may apply with respect to others.

### *Coverage of the Law*

In the beginning, and for a relatively long time, it was the prevailing view that there was or should be little concern to building con-

tractors on account of this law. Work in excess of forty hours during 1938 and for some time after was rare. The wages were far in excess of the minimum wages provided. More important, however, construction was long regarded as local in character and therefore not within the law which covered only employees engaged in commerce or in the production of goods for commerce.

In due course the Administrator of the Wage and Hour Law issued certain bulletins. The best known is Interpretative Bulletin #5 (October 1940), in which, among other things, it was said that, "employees of local construction contractors generally are not engaged in interstate commerce and do not produce any goods which are shipped or sold across state lines." The Administrator stated further that in his opinion, "employees engaged in the original construction of buildings are not *generally* within the scope of the Act, even if the buildings when completed will be used to produce goods for commerce." In the same bulletin the Administrator was careful to point out that "there may be particular employees of such construction contractors, however, who engage in the interstate transportation of materials or other forms of interstate commerce and are for that reason entitled to the benefits of the Act." The Interpretative Bulletin and other pro-

nouncements by the Administrator indicated that the maintenance, repair or reconstruction of buildings used in the production of goods for commerce was an engagement in interstate commerce by the employees of the contractor, or that the work of such employees was "necessary to the production of interstate goods," and therefore work in the production of goods for commerce.

The determinations or opinions of the Administrator (entitled to great weight by the Courts in construing and applying the law itself) were followed by many decisions in various Courts throughout the country. There was a considerable range of uncertainty and it is not clear even to this date in the absence of definitive ruling by the United States Supreme Court which employees of building contractors are covered and which are not covered. There are many decisions in favor of particular employees upon the particular facts disclosed concerning their work. There are relatively few decisions upon classifications of employees where all of a particular classification have been held to be or not to be within the coverage of the Act. There are some decisions which deny coverage to particular employees upon the facts disclosed.

Because of the penalties which flow from violation of this Act, namely, liquidated damages in the amount of the premium time required to be paid over and above

\* Former Administrator of the Fair Labor Standards Act.

the premium time itself, twice the amount of underpayment in all and attorneys' fees, and the admonition by the United States Supreme Court that the statute must not be "interpreted or applied in a narrow or grudging manner," there is a compelling reason for each contractor to consider carefully the work of his employees, to take counsel if necessary upon the coverage of the Act to any of his employees, and to comply with the law in any case of doubt.

### Basic Principles

In applying the foregoing caution there are some reasonably established principles:

1. The application of the Fair Labor Standards Act depends upon the character of the employees' activities, not the nature of the employer's business.

2. The primary, although not necessarily exclusive, question in the determination of the application of the law with respect to non-manual employees and apart from those specifically exempted from the law, is whether any of them is "engaged in commerce."

3. The Supreme Court has held that this clause covers every employee in the "channels of interstate commerce as distinguished from those who merely affected that commerce." The test under the law, to determine whether an employee is engaged in commerce is not whether the employee's activities affect or indirectly relate to interstate commerce, but whether they are actually in or so closely related to the movement of the commerce as to be part of it.

4. The Supreme Court has decided that employees of contractors engaged in the alteration, repair or reconstruction of certain instrumentalities of commerce are within the Act. Under this holding it can be said with certainty that building contractors, as such, are not exempt from compliance with the law. Employees, therefore, of building contractors who are engaged in the repair, alteration and maintenance of buildings in which there is production of goods for commerce may be held to be employees engaged in the production of goods for commerce.

For most of these past ten years there has been lack of authoritative

Let us illustrate the problem by seven examples, in each one of which the base rate is assumed to be \$2.00 with double time for all other rates including the premium hours on Saturday and Sunday:

### Example 1

M T W T F S  
8 8 8 8 8 8 = 48 hrs.

Contract Requirement  
\$112.00  
(40 × \$2 = \$ 80)  
( 8 × \$4 = \$ 32)  
—————  
\$112)

8 8 8 8 8 8 = 48 hrs.

Statutory Requirement  
\$104.00  
(40 × \$2 = \$ 80)  
( 8 × \$3 = \$ 24)  
—————  
\$104)

NOTE: Here the workweek begins Monday, so Saturday premium pay can be credited and there is no problem.

### Example 2

M T W T F S  
8 9 8 9 8 8 = 50 hrs.

Contract Requirement  
\$120.00  
(40 × \$2 = \$ 80)  
( 2 × \$4 = \$ 8)  
( 8 × \$4 = \$ 32)  
—————  
\$120)

M T W T F S  
8 9 8 9 8 8 = 50 hrs.

Statutory Requirement  
\$110.00  
(40 × \$2 = \$ 80)  
(10 × \$3 = \$ 30)  
—————  
\$110)

NOTE: Here again, as in Example 1, both the daily and weekly overtime on Tuesday, Thursday and Saturday may be credited so there is no problem.

### Example 3

W T F S S M T  
8 8 8 8 0 8 8 = 48 hrs.

Contract Requirement  
\$112.00  
(40 × \$2 = \$ 80)  
( 8 × \$4 = \$ 32)  
—————  
\$112)

8 8 8 8 0 8 8 = 48 hrs.

Statutory Requirement  
\$121.20  
(40 × \$2.33 = \$ 93.20)  
( 8 × \$3.50 = \$ 28.00)  
—————  
\$121.20)

NOTE 1: Here the workweek begins Wednesday so Saturday premium time cannot be credited but must be included in the computation of a new statutory "regular rate."

The statutory "regular rate" in this case must be found by dividing 48 (the total hours worked) into \$112.00 (the total pay) and the overtime rate is 50% additional.

$$48/\$112. \$2.33 + \$1.17 = \$3.50$$

NOTE 2. Here the statute requires \$9.20 more than the contract.

### Example 4

W T F S S M T  
8 8 8 8 8 8 8 = 56 hrs.

Contract Requirement  
\$144.00  
(40 × \$2 = \$ 80)  
(16 × \$4 = \$ 64)  
—————  
\$144)

The statutory requirement for the above example, with 7 eight hour days would be.....\$164.56  
(40 × \$2.57 (average rate found by dividing 56 hrs. into \$144)..... = \$102.80  
(16 × \$3.86 (\$2.57 + \$1.29) 50% overtime premium)..... = 61.76  
\$164.56

NOTE: Here the statute requires \$20.56 more than the contract.

### Example 5

W T F S S M T  
7 7 7 7 0 7 7 = 42 hrs.

Contract Requirement

\$98.00  
(35 × \$2 = \$70)  
(7 × \$4 = \$28)  
—————  
\$98)

The summary requirement for the above example,  
with 6 seven-hour days would be.....\$100.20  
(40 × \$2.33 (average rate found by dividing 42 hrs.  
into \$98)..... = \$ 93.20  
(2 × \$3.50 (\$2.33 + \$1.17) 50% overtime premium)..... = 7.00  
\$100.20

NOTE: Here the statute requires \$2.20 more than the contract.

### Example 6

W T F S S M T  
6 6 6 6 6 6 6 = 42 hrs.

Contract Requirement

\$108.00  
(30 × \$2 = \$ 60)  
(12 × \$4 = \$ 48)  
—————  
\$108.00)

The statutory requirement for the above example,  
with 7 six-hour days would be.....\$110.52  
(40 × \$2.57 (average rate found by dividing 42 hours  
into \$108)..... = \$102.80  
(2 × \$3.86 (\$2.57 + \$1.29, 50% overtime premium)..... = \$ 7.72  
\$110.52

NOTE: If there were six days of six hours or any other weekly aggregate  
of less than forty hours the law would have no application, but here  
the statute requires \$2.52 more than the contract.

### Example 7

W T F S S M T  
10 8 8 8 8 8 8 = 58 hrs.

Contract Requirement

\$152.00  
(40 × \$2 = \$ 80)  
(18 × \$4 = \$ 72)  
—————  
\$152)

The statutory requirement for the above example with six  
days of 8 hours and 1 day of 10 hours would be.....\$170.94  
Contract pay .....\$152  
Credit for true overtime worked on Wednesday..\$ 4  
\$148  
(40 × \$2.55 (average rate found by dividing 58 hrs.  
into \$148)..... = \$102.00  
(18 × \$3.83 (\$2.55 + \$1.28, 50% overtime premium)..... = \$ 68.94  
\$170.94

NOTE: Here 2 extra hours are worked on Wednesday. They may be cred-  
ited as bona fide overtime even though 1 hour is from 7 A.M.-8 A.M.  
and the other from 5 P.M.-6 P.M., but the statute still requires  
\$18.94 more than the contract.

decision and an inability on the part of counsel to set forth established law upon the differences between "original construction" on the one hand, and "repair, alteration or reconstruction of buildings" on the other. From certain decisions by the Courts and from unofficial expressions, it is our view that there is only one safe working rule with respect to construction of new independent industrial buildings. Where such new construction is upon a new location unconnected or unrelated to other buildings or

structures at or within the proximity of the same location, the Act does not apply to the mechanics or laborers engaged upon such construction. The Act may apply, as we have said, to some of the staff employees. In the case of original construction of housing, multiple or individual units, or in the case of even alteration, repair or reconstruction of housing units, the Act, in our opinion, does not apply to the mechanics and laborers at the site of construction. In the case of original construction of an indus-

trial or commercial building at or in the proximity of the location of existing buildings or structures utilized in the production of goods for commerce, where the new building is connected with any of the existing buildings or structures, or is or is to become an integral part of a plant engaged in the production of goods for commerce, the mechanics and laborers engaged upon such new construction may in all likelihood be deemed to be within the coverage of the Act.

### Premium Time Upon Premium Time

With the foregoing exposition of the history and coverage of the Act to the building construction industry, the industry must face squarely the decision of our Supreme Court in June 1948 which imposed "premium time upon premium time." While these cases were concerned with the stevedoring industry their impact is much wider and deeper. These decisions present sharply the basic question whether "premium time," that is, a wage rate higher than the basic or regular wage rate, may be credited against the statutory overtime required by the Wage and Hour Law. The Supreme Court ruled that in order to be credited the "premium time" had to be "extra pay for work because of previous work for a specified number of hours in the work week or work day, whether the hours are specified by contract or statute." If the "premium time" (larger wage rate) was paid because the work was done in "undesirable hours" rather than for "overtime," the excess in the premium time over the regular basic wage rate could not be credited against the statutory requirement for time and a half the regular rate for hours worked in excess of forty hours during any work week.

There has been particular attention to work done on Saturdays or Sundays where under union agreements or by practice these days fall within the work week rather than at the end of a work week. It is universal in the building construction industry to pay "premium time," that is, double time or time and a half for work on Saturdays or Sundays, and it has been almost the universal practice, pursuant to union agreements or by custom, to pay on Thursdays or Fridays for



work done to the close of the preceding Tuesday or Wednesday night. Under such practice the work done on Saturdays or Sundays would fall within the work week, according to the decisions by the Supreme Court, and therefore, the excess wage paid for work done on those days could not be credited to the statutory requirement for the payment of time and a half for work done on the closing day of the week (Tuesday or Wednesday as the case may be) if work done on the sixth or seventh days of the week meant for any employee work in excess of forty hours during such work week.

There have been interpretations by the Administrator of the Wage and Hour Law (P.R. 153, 161) and a number of letters or other pronouncements in furtherance of such interpretation and answering specific questions raised thereby.

#### **What Is Overtime?**

The problem just discussed and the interpretation mentioned may be set forth as follows:

A premium pay which is paid by custom or is required by union agreement to be paid for work on Saturdays and Sundays may be either an overtime payment or a shift differential, depending upon how the payment is made. If the premium is paid for work on Saturday or Sunday, as such, without regard to the number of hours or days previously worked by employees in that week, the payment is, according to the Wage and Hour Administrator, a shift differential. It must be included in the base rates for overtime computation and thus give rise to "overtime on overtime" or "premium time on premium time." If the payment for work on those days is contingent upon the employees having previously worked a specified number of hours or days according to a bona fide standard, such premium pay is an overtime premium and it need not be included in base rates and may be credited against overtime due under Wage-Hour rules.

In consequence, there arises the necessity of a change in the agreement or the practice from a work week commencing some day during the week and ending on the preceding day of the following week

to a work week which begins Monday morning and ends the Sunday night or the following Monday morning at the same hour.

The Administrator postponed from time to time enforcement by his Division of his own interpretation of the meaning and effect of the Supreme Court decisions. The last postponement was until after the Supreme Court had passed upon applications for a rehearing of the stevedoring cases. On October 11th, 1948, the Supreme Court announced that it would not reconsider these cases, and the Administrator then announced that enforcement by his Division of his interpretation would ensue. Whatever the extent of enforcement by the Administration may be there is, of course, always the possibility that there may be suits by certain employees or groups of employees for "premium time upon premium time." Because the interpretation of the Wage and Hour Division is of such force and effect in the consideration and determination by Courts in such suits, it is no longer an issue for speculation, and each contractor can with safety do no less than revise his practices or at least try to change his work week from Monday at 8 a.m. to the following Monday at the same hour with payroll payment during the week following on such day as may be convenient and agreeable.

#### **Questions and Answers**

There has been much said in the press and in bulletins and other informative letters issued by various trade associations upon this subject. Certain questions have been propounded to the Wage and Hour Division by some of these trade associations. Some of the answers have been circulated to the members of these trade associations or generally. For the reasons we have stated upon the effect of the rulings of the Division, we have submitted a series of specific questions to the Wage and Hour Division for answer. We have tried to make these questions clear and to cover factual settings within our knowledge of the industry. We have sought to procure "Yes" or "No" answers to these questions. Herein below are set forth the questions which have been submitted, and the answers which

have been received. It is our intention to keep informed and to either, advise the members further upon specific questions with specific answers by the Wage and Hour Division, or upon further questions raised, to submit them to the Wage and Hour Division for similar answers.

1.

*Q. (a) Does it make any difference when the work week ends and begins? (b) For instance, if the contract provides for a work week through Thursday night with pay on Friday, may Saturday and Sunday work be included within the work week for overtime purposes and so creditable? (c) Can payment be delayed until the Monday following the Saturday and Sunday worked or, for instance, the next Friday in order that a computation can be made of the total amount due including the Saturday and Sunday work?*

A. (a) Yes. (b) No. (c) Yes.

The payroll week in practice must conform with the contract payroll week and if the work week is through Thursday night, Saturday and Sunday are not, in fact, overtime days since they occur in the middle of the work week and therefore special rates of pay for them may not be credited against statutory overtime.

2.

*Q. Where the payroll week is from midnight Sunday to midnight the following Sunday and provision is made in the collective Agreement for an overtime rate for Saturday and Sunday work, may that overtime be credited toward statutory overtime? Does it make any difference whether the work week is the calendar week so that technically, Sunday is the first day rather than the last?*

A. Yes. Overtime may be credited but if Sunday is the first instead of the last day of the payroll week, it is not an overtime day since it is the beginning day of the payroll week and a special rate for Sunday work would be for "disagreeable hours" and not overtime hours.

3.

*Q. If the Agreement provides for regular hours from 8 A.M. to 4 P.M. with a premium rate of pay of double time for any hours worked beyond (Please turn to page 176)*

# NEWS SUMMARY OF THE MONTH

## ***Allocations Extended***

Both Houses of Congress recently voted to extend the voluntary allocations program for steel that has been operating by authority of Public Law 395. The allocation of steel for warm air heating equipment has been continued but the former figure of 31,625 tons monthly is to be reduced to 26,400 and the new figure will be effective from April through June. No allocation to the warm air heating industry is being made for the month of March.

At its meeting in December the National Warm Air Heating & Air Conditioning Association passed a resolution addressed to the Office of Industry Cooperation requesting the allocations of steel for warm air heating equipment be continued. The resolution cited a survey which indicated that the allocation program had made almost 10,000 more tons of steel a month available to the industry. It further said that the industry could hardly operate economically and efficiently if it was forced to pay premium prices to obtain the steel needed for furnaces. With the emphasis on low priced housing and the continuing housing shortage the NWAH&ACA came to the conclusion that allocations were essential.

## ***Warm Air Furnace Shipments***

NOVEMBER SHIPMENTS OF WARM AIR FURNACES totaled 77,498 and showed a drop of 28 per cent below the October shipments. This figure was 7 per cent higher than the shipments in November of last year however. Shipments of solid fuel furnaces during the month came to 40,114 units which was 28 per cent lower than the previous month. There were 19,981 oil fired furnaces shipped during November and this marked a 25 per cent decline. Gas fired furnace shipments totaled 17,403, down 30 per cent under October.

Slightly more than 5,000 furnaces were shipped out of inventory during the month of November. These figures are from records compiled by the Bureau of the Census, Department of Commerce.

December shipments of warm air furnaces amounted to 51,521 units of all types. Out of this total coal fired furnaces accounted for 22,551 units; oil fired, 15,715 units and gas fired, 13,255 units.

Production in December exceeded shipments in contrast to the situation in November. The inventory of the industry at the end of November was 69,098 and during December it increased to 79,810.

## ***Wage-Hour Law Amendments Proposed***

INCREASE OF THE STATUTORY MINIMUM WAGE provided by the Fair Labor Standards Act to 75 cents an hour and clarification of unsolved overtime pay problems, including those posed by the Supreme Court's decision of last June in the back-wage suits of East Coast longshoremen, are among the recommendations for amendment of the act urged of the Congress in the

1948 fiscal year annual report of the Wage and Hour and Public Contracts Divisions, U. S. Department of Labor.

Presented to the 81st Congress by Wm. R. McComb, Administrator of the Divisions, the report contains an analysis of the administration of the 10 year old Federal Wage and Hour Law and details of both his new and previously-stated recommendations for changes "needed on the basis of the realities of today."

## ***Research Into Codes and Measurements***

A DIVISION OF STANDARDIZED BUILDING CODES and Materials has been established within the Housing and Home Finance Agency to carry on research into the development and application of improved and standardized building codes and measurements. The term modular coordination is usually used in regard to standardized dimensions and assembly methods for materials.

Leonard G. Haeger, chief of the Technical Staff, heads the new division as director. Authority for the establishment of this new division was contained in the Housing Act of 1948.

## ***OHI Convention***

BOSTON'S STATLER HOTEL will be the scene of the 26th annual convention of the Oil Heat Institute, May 16 to 20. Running concurrently with the convention will be the National Oil Heat Exposition to be held in Mechanic's Hall. At this date over 80 per cent of the space for the exposition has been sold.

The OHI has recently published some figures on oil burners in use and the sales goal for 1949 has been set. According to the OHI estimate there were 4,132,591 power driven oil burners in use at the end of 1948. This included 350,000 new fuel oil users added in 1948. About 88,000 owners also replaced old oil burners with new ones during the past year.

A. E. Hess, managing director of the OHI, says "Easier oil conditions in the last six months of 1948 brought about an upswing in the sales curve for the industry, changed sales characteristics and started the oil burning industry on 1949 business with a real lift. We have a goal of 550,000 power driven oil burners in the new year and confidence that we can make this goal with a return to general use of prewar sales methods."

## ***First Year of LMRA***

THE NATIONAL LABOR RELATIONS BOARD recently submitted to Congress its report covering operations under the Labor-Management Relations Act during the period of August 22, 1947 to June 30, 1948.

The board reported that during the entire 1948 fiscal year it had issued decisions in the unprecedented total of 2,079 cases. During that year there had been 36,735 cases filed with the agency compared to the high of



14,909 cases filed in 1947 under the Wagner Act.

The agency closed the fiscal year with 12,642 cases pending action but this number was reduced to 6,110 by December 31, 1948. During the first year of LMRA the unions won 72.5 per cent of the collective bargaining elections conducted by the agency. This compared with the record of union victories in 81.4 per cent of the elections during 12 years of the Wagner Act.

### **Housing Starts Down 11 Per cent in January**

THERE WERE 50,000 NEW permanent nonfarm dwelling units started in January, according to preliminary estimates of the Bureau of Labor Statistics, U. S. Department of Labor. This was 6,000 under the estimate for December, and 2,600 under the number started in January a year ago. Extremes of winter weather in many sections of the country was partly responsible for the lower level of new housing activity this January.

Included in the January 1949 estimate were 4,000 publicity financed units, 3,500 of which were in projects put under construction by the New York City Housing Authority.

### **New Monthly Steel Record**

PRODUCTION OF STEEL exceeded 8,000,000 tons a month for the first time in January, the American Iron and Steel Institute announced. The total of ingots and steel for castings was 8,172,236 net tons, which exceeded the entire 1948 output in any other country except Great Britain and Russia.

This new high level was an increase of 401,000 tons over December 1948, and nearly 700,000 tons over January 1948. This latter is an unusually large gain compared with previous year-to-year comparisons.

Steelmaking furnaces of the industry were operated at an average of 100.1 per cent of the new record high capacity. It was the third recent month in which operations were at or above 100 per cent, the other two being October and November, 1948.

The January output indicates the ability of the industry to make more steel in 1949 than the total of 88,533,000 tons reported for last year.

### **New Aluminum Sources Found**

IMMENSE DEPOSITS OF HIGH QUALITY BAUXITE (aluminum ore) discovered on the islands of Jamaica, Haiti, and Hispaniola in the Caribbean will prove of untold value to any defense program the United States may adopt, according to O. C. Schmedeman, vice president and chief geologist at Reynolds Mining Corp., Little Rock, Arkansas, a subsidiary of Reynolds Metals Co.

These discoveries are particularly significant in view of the virtual exhaustion of high grade reserves in the United States, the four-fold expansion of the industry during the past seven years and the general inadequacy of the reserves in Guiana. Their abundance and ease of mining and shipping may well prove decisive from a military standpoint in a future emergency. The reserves drilled and sampled to date total at least 350 million tons of which 90 per cent or more is in Jamaica and the remainder divided between Haiti and the Dominican Republic.

### **Midwest Stoker Association Meeting**

THE ANNUAL MEETING of the Midwest Stoker Association was held at the Builders Club, Chicago, Wednesday, February 2, and E. W. Jones, office manager for the Chicago factory branch of the Iron Fireman Manufacturing Co. was elected president for the coming year. He succeeds F. J. Moran, sales manager, C. E. Sundberg Co. who served as president of the organization for one year.

Other officers elected were: vice president, F. H. Herndon, president, Herndon Sales & Service Co., and secretary-treasurer, P. I. Bohmann, district manager, U. S. Machine Corp.

The three officers were also elected to the board of directors together with F. J. Moran, retiring president, and Charles Requa of the Central Fuel Corp.

### **Stoker Manufacturers Meet**

THE WINTER MEMBERSHIP CONFERENCE of the Stoker Manufacturers Association was held at the La Salle Hotel in Chicago on January 27. Most of the country's manufacturers of underfeed stoker equipment together with representatives of the industry's major supply firms and guests representing allied industries and the press were in attendance.

Guest speakers were: J. Nelson Stuart, manager, Coal Heating Service Division, National Coal Association, Washington, D.C.; K. C. Richmond, editor, *Coal-Heat*, Chicago; Jack H. Price, general sales manager, Truax-Traer Coal Co., Chicago; and R. E. Moore, vice president, Bell & Gossett Co., Morton Grove, Illinois.

The directors of the association met briefly prior to the general membership meeting. The financial statement for last year was approved and a budget for 1949 was tentatively adopted. The directors voted to hold the annual meeting of the association this year at French Lick Springs, Indiana on June 13 and 14.

### **Factory Sales of Stokers**

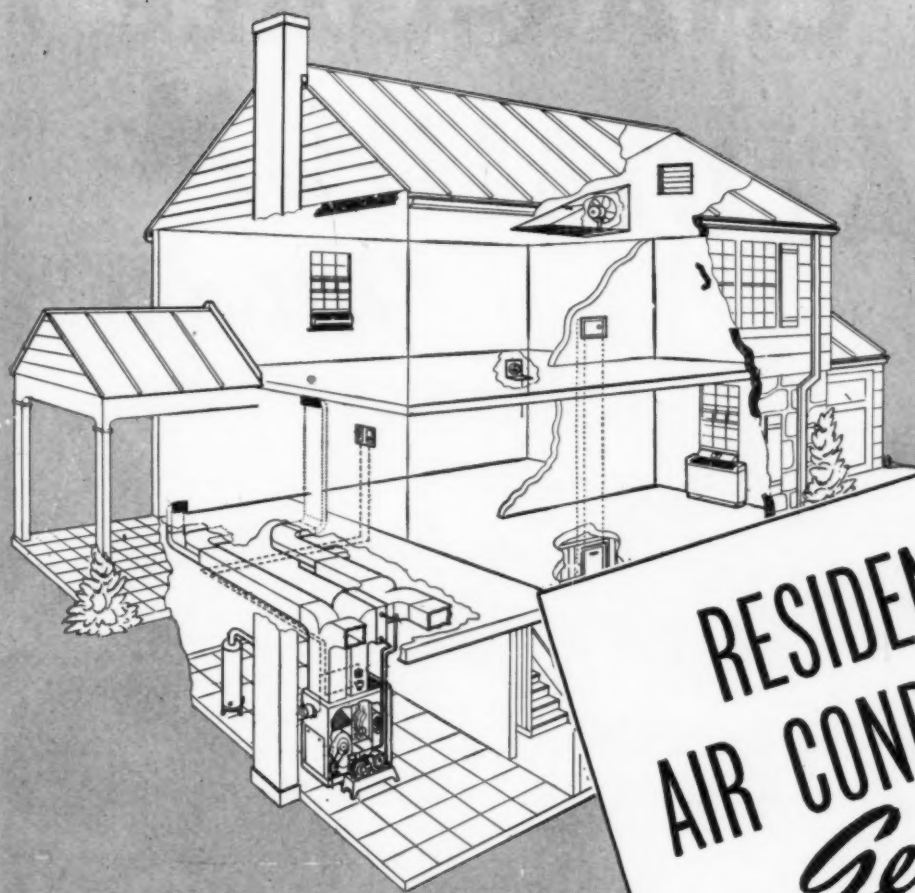
FACTORY SALES OF MECHANICAL and automatic coal stokers of all sizes and types for the year 1948 totaled 85,378 units as compared with 68,908 units in 1947 and 190,918 units in 1946, according to the latest data released by the Bureau of the Census, Department of Commerce. The report represents data for all known producers of stokers in the United States. Statistics cover factory sales to distributors and dealers, and in the case of the larger sizes of industrial stokers, sales are made direct to users under individual engineering specifications and contracts.

Sales of Class 1 stokers for residential heating totaled 70,859 units in 1948 compared to 56,736 machines in 1947.

### **Anthracite Promotional Aids**

THE ANTHRACITE INSTITUTE has developed a series of promotional aids for dealers and contractors. These aids are supplemental to the extensive advertising program that has been mapped out for the coming year by the Institute. *More heat for less money* is the message that will be carried to the consuming public by both general and trade magazines.

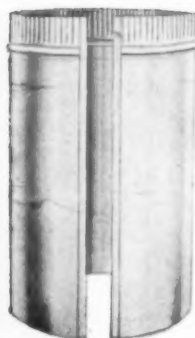
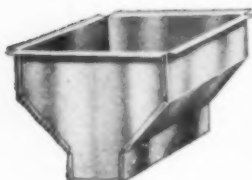
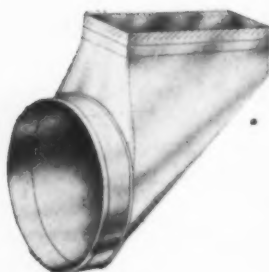




# RESIDENTIAL AIR CONDITIONING *Section*

INDOOR COMFORT — IN ALL SEASONS  
FOR HOMES AND SMALL BUSINESSES

Showing just a few  
Char-Gale fittings



# CHAR-GALE ALUMINUM *Fittings*

THE ANSWER TO SUCCESSFUL  
AND PROFITABLE FURNACE  
INSTALLATION . . . . .

## Feather Light



The easiest handling fittings ever made! Cut strain and time on installations—cut transportation time and cost—cut handling time on the job.

## Stronger - Longer Lasting



Rustproof clear through! Installations are stronger with aluminum—last years longer.

## Better Looking



More customer satisfaction! The smooth, bright beauty of these fittings does not discolor with heat or time. Needs no painting or covering—just naturally beautiful.

# And It Costs No More!

PREFABRICATED  
DUCTS AND FITTINGS  
FOR WARM AIR  
HEATING

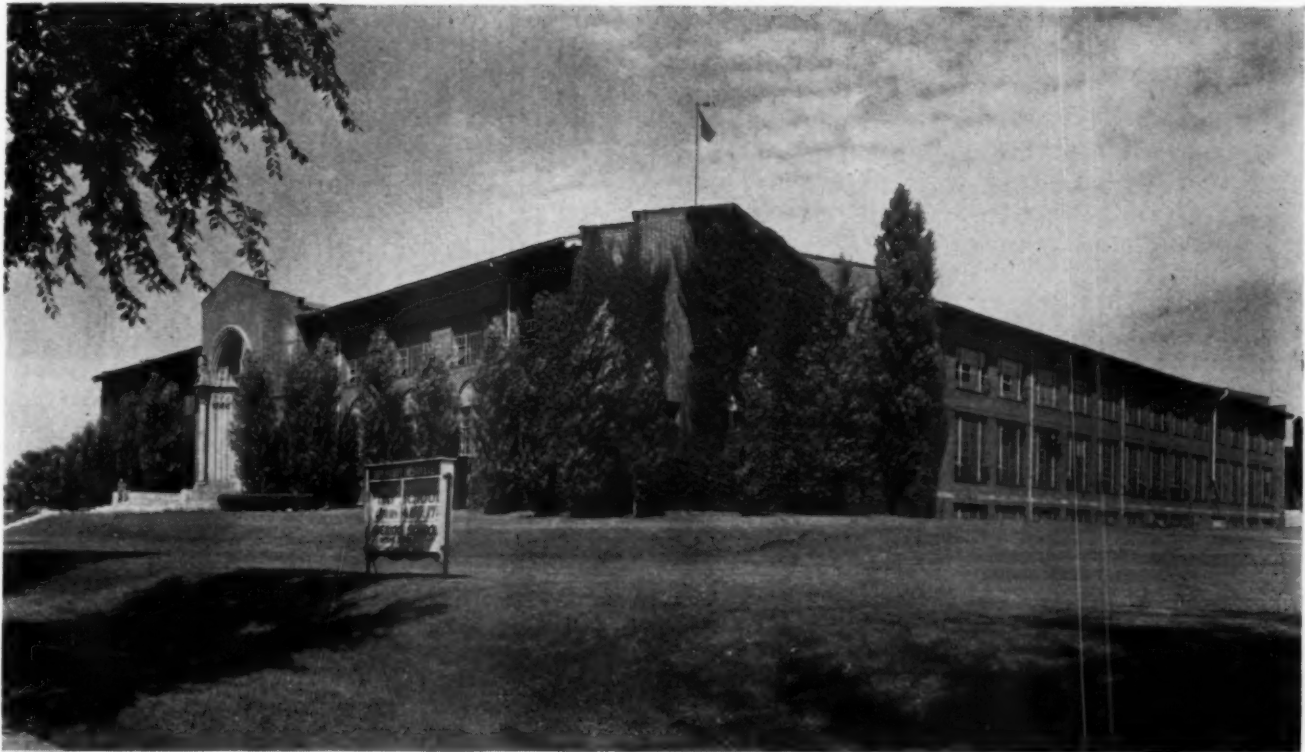
## CHAR-GALE

MINNEAPOLIS  
OMAHA

ANOTHER PRODUCT OF CHAR-GALE METAL CRAFTSMEN

"NO HEATING PLANT IS BETTER THAN ITS INSTALLATION — NO INSTALLATION CAN BE BETTER THAN ONE OF CHAR-GALE FITTINGS"

# Dunwoody Institute Teaches "*How, What & Why*" Of Air Conditioning and Warm Air Heating



The school and grounds at Dunwoody

One of the most prominent technical training schools in the country is Dunwoody Institute of Minneapolis, Minnesota. This is the first of a two-part article which describes the nature of the training that is available at this fine institution.

**"T**AKE it easy on that oil burner," said the instructor. "Better look at your JK notes." The student was servicing a gun type oil burner which had been studied in the JK (Job Knowledge) class. All around him in the shop other students were working on various jobs, repairing and testing oil burners. And in other shops throughout the building, other students were fabricating ventilating ducts, repairing autos, baking bread, repairing electric appliances.

## *A Brief History*

That is the sort of training experience which goes on day after day at Dunwoody Industrial Institute in Minneapolis, Minnesota, an endowed non-profit school where men of any race, color, or creed may study for the trade of their preference. Just a short 35 years ago there was no Dunwoody Institute, but only an idea in the mind of William Hood Dunwoody, a Minneapolis

businessman. Mr. Dunwoody had long felt that not enough attention was given to the training of tradesmen, and wished to start a school to remedy this situation. Upon his death, he designated in his will that a portion of his estate should be set aside to start the school of which he had dreamed. It was opened in December, 1914, with about 70 students attending. Dr. C. A. Prosser was the first director of the school, and he was succeeded in 1945 by J. R. Kingman, Jr.

Limited facilities in buildings and equipment, practically no text matter, and few courses, such was the situation at the beginning of the Institute. But with the building of new shop quarters, the era of expansion was beginning. And as more and more trades required exact training, and as newer trades developed with new inventions, departments of training were added to the school. Present departments at the school include air conditioning (which has under it general air condi-





Here is a general view of the air conditioning shop at Dunwoody, with students at work on the heating plants



At the left the two students are learning how to use combustion testing instruments

tioning, refrigeration, warm air heating, ventilating and sheet metal, and sheet metal courses); auto; building construction; electrical; machine shop and mechanical drafting; printing; power and welding; and baking. A general subjects department is set aside so the students can have special instruction in arithmetic, learn correct business English, bookkeeping for their business, and employer and employee relationships. This division offers other subjects for employment and civic adjustment needed by all workers.

#### **Courses Are Current**

The air conditioning department was re-organized just after the end of World War II to include the three inter-related fields: sheet metal, refrigeration, and air conditioning. Previously these subjects were under various other departments in the school. However, as each year brought increased proof that this field was going to be a big and important one in American industry, the change was made to provide more intensive

instruction for specific employment areas in this work.

Each of the courses in the air conditioning department requires 18 months to complete, as do the other courses offered at Dunwoody (with the exception of baking). The classes are planned on a four week basis so that a student may enter at the beginning of one of these four week periods. Usually the 18 month course is enough to give a beginner a good start in the knowledge of the trade, for the units in these courses are laid out to give the maximum skill and knowledge. Students cannot deviate from these units in a course unless they have had previous experience. Students who have extensive knowledge in the trade may take special courses.

#### **Student Body International**

And these students come from all over the United States and the world. In the past year alone they came to the school from 14 foreign countries, and 38 of the 48 states. They come because a graduate has suggested Dunwoody or they have read about the school somewhere, or it had been recommended to them by educational counselors, or by someone in the trade. The majority are from Minnesota, but an increasingly large group each year is from out of the state.

Dunwoody does not maintain dormitories, but does keep information on the housing available for students, and helps them find rooms. Although rooms are plentiful, apartments and houses are scarce, so most married men do not bring their families to the city until they have found adequate housing for them. For the students, the school maintains a cafeteria (open on

schooldays) which offers meals at a reasonable cost.

Dunwoody students are sure of getting their training under instructors who know what the job is about. It has long been the policy at Dunwoody to hire as instructors men who are proficient in their trade. Some do not have college degrees, but the school feels that if they know their trade, appropriate and necessary instructor training can be given them at the school.

The present head of the air conditioning department, Herbert J. Pierson, worked for many years in the air conditioning field before coming to Dunwoody. The same can be said for the 11 instructors who work under him. (Several are Dunwoody graduates, brought back to teach after a number of years in their trades.)

The student's training is slanted to put the emphasis on the actual trade or shop work. Though their time is spent in about one-half classroom and one-half shop work, the students find their classroom work directly related to shop work, and the same instructor teaches his students in both shop and class. In this way the teaching may be correlated.

Classroom material is sometimes drawn from textbooks, but more often the "text" is written by the instructors. They write the tests, the study assignments, the questions designed to evoke the special knowledge required in the students. And they present the JK and TK. Those are familiar terms to any Dunwoody alumnus, and mean Job Knowledge and Trade Knowledge. Job Knowledge covers the actual "how and why" of a job. In General Air Conditioning, for instance, it includes the "how to" of testing, installing and repairing oil burners. Trade Knowledge gives the background, the "encircling" knowledge required in the field. Trade terms, applied arithmetic, sketching, types of tools, parts, and equipment of all sorts come under TK.

#### *Fine Equipment Used*

Dunwoody puts actual materials and good equipment into the hands of its students so they will be able to learn the techniques of the trade on the most up-to-date devices available. For example, here is some of the equipment which is found in the air conditioning shops at Dunwoody: gas, oil and coal fired forced air, gravity warm air, hot water and steam heating units; all types of fans for fan tests; a heat pump for heating and cooling; electronic and mechanical air washers for air cleaning; mechanical cooling and dehumidifying units; steam and water humidification units. There are also manometers, velometers, anemometers, pyrometers, and many other instruments necessary in air conditioning work.

When a student enters Dunwoody in one of the courses in the air conditioning department, he enters a course in which he can use his skills, and which will help him enter a field which he likes. For example, the General Air Conditioning course aims to provide general basic training so a student can become equipped with the knowledge to enable him to enter employment as a draftsman, layout man, estimator, or sales engineer. The course in Warm Air Heating, Ventilation and Sheet Metal, is just that. It trains the student for bench or shop work and installation work. The separate Sheet Metal course trains for several occupations, which will be dealt with in another article.

Just what units does the beginning student take to get to the place where he is ready to enter employment? The 18 month course is laid out with six of the units taken by students in both the General Air Conditioning course, and the Air Conditioning, Warm Air Heating, Ventilation and Sheet Metal course. These are:

- 1 Ducts and Fittings, Shop I
- 2 Ducts and Fittings, Drafting I
- 3-4 Warm Air Heating, Drafting and Layout, I, II
- 5 Elements of Heating and Cooling, Lab I
- 6 Air Flow and Measurements, Lab III.

The month spent in Ducts and Fittings, Drafting I, gives the student training in the layout of round fittings (such as the layout of elbows at various angles, cowl ventilators, etc.), and of various angles, and openings in main pipes for tee joints. Shop work in Ducts and Fittings gives the student an introduction to the fabrication of duct fittings involving the making of rectangular elbows, tee joints at different angles, and many other problems.

#### *Heating Course*

In Warm Air Heating, Drafting and Layout I and II, the student works at laying out gravity and forced air heating systems for residences. The unit on Elements of Heating and Cooling, Lab I, includes study of and experimentation with basic physical principles underlying heating, ventilating, and other phases of air conditioning (such as radiation, convection, and conduction). Fans, ducts, duct fittings, duct friction losses and other points are covered in the unit on Air Flow and Measurements (Lab III).

#### *Air Conditioning Course*

The following units are those which are given to General Air Conditioning students, in addition to the six previously listed. You will note that these units give a general over-all view of the air conditioning picture in order to train these students for the type of employment they seek:

- 1-6 Listed above
- 7 Elements of Heating and Cooling, Lab II
- 8 Heating and Cooling Operation and Service, Lab IV
- 9 General Jobbing, Shop I
- 10 Basic Electricity I
- 11 Automatic Controls I
- 12 Refrigeration I Basic
- 13 Refrigeration II Domestic Units
- 14 Refrigeration IV Commercial Service
- 15 Pipefitting I
- 16 Comfort Cooling, Drafting and Layout IV
- 17 Oil Burners, Gas Burners, and Stokers I
- 18 Steam and Hot Water, Drafting and Layout III

In Elements of Heating and Cooling, Lab II, students study the construction and operating characteristics of air cleaners, and the application and efficiency of various types of insulation and vapor barriers. Heating and Cooling Operation and Service, Lab IV, is a unit devoted to the testing and servicing of various types of heating and air conditioning units and controls, and the study of their operating characteristics. General Jobbing, Shop I, consists of making test seams, wiring straight and curved edges, soldering seams in several



Resetting the electrodes on a gun type oil burner is one of the things a student learns to do in the air conditioning department. In the photo the instructor is directing the procedure

positions, and many other items. Basic Electricity I finds the student connecting meters in a simple series and parallel circuits, studying the principles of magnetism, making small wire connections requiring knowledge of splicing, soldering, and taping. A unit's work on Automatic Controls I deals with the connection, operation and installation of typical temperature, pressure, and level control systems used in heating and other air conditioning work.

#### **Refrigeration Studied**

Refrigeration I, II, and IV deal with three sections of refrigeration work: basic work, which is introductory in nature; domestic units, in which the student learns the functions, relationships and operating characteristics of the various parts of a completely assembled domestic refrigeration unit; and commercial service, dealing with compressors, valves and controls used in commercial refrigeration.

Practical pipefitting is covered in the unit called Pipefitting I. The objective of this training is to prepare the student for assembly, installation, repair and maintenance of steam and hot-water heating units and systems. Comfort Cooling, Drafting and Layout IV gives the student training in the layout of comfort cooling systems, including calculation of heat gains, and sizing and locating of cooling units, and the distribution system. Oil Burners, Gas Burners, and Stokers I, deals with various firing devices. Steam and Hot Water, Drafting and Layout III teaches the layout of steam and hot water heating systems.

In the course on Air Conditioning, Warm Air Heating, Ventilation and Sheet Metal, the following units

are added to the basic courses:

- 1-6 Listed above
- 7-9 General Jobbing, Shop I, II, III
- 10 General Jobbing, Drafting I
- 11-14 Ducts and Fittings, Shop II, III, IV, V
- 15-16 Ducts and Fittings, Drafting II, III
- 17 Sheet Metal Electric Welding I (Gas and Arc)
- 18 Miscellaneous Sheet Metal Work I.

These units are more specialized as befits this course which leads to more specialized work. For instance, there are three months of shop work in General Jobbing I, II, and III, in sheet metal work. These units start with the making of test seams, connecting collars to flat surfaces, and making boxes of light and heavy construction; and move on into the making of tin cups, garbage cans, funnels, rectangular tanks, tool boxes, cabinets, and flaring pails. A month's work in General Jobbing, Drafting I, in this field, consists in laying out full-size patterns on paper of several of these pieces of equipment.

#### **Sheet Metal Shop Work**

Similarly there are four months of shop work in sheet metal Ducts and Fittings (II, III, IV, and V) in addition to that mentioned in the first six listed. There are also two units in Drafting (II, III) on this subject. In the shop work the student makes tees into reducing joints, spiral elbows, change elbows and fittings used in air conditioning, blowpiping, and ventilation work. Also produced are elliptical-to-round ship ventilators, odd-angle elbows, double offsets, and finally a half-

*(Please turn to page 182)*



# Air Distribution For Comfort

JAMES J. LASALVIA  
Consulting Engineer  
Cleveland, Ohio

This discussion shows the importance of proper air distribution to comfort. The various means of achieving correct distribution of air are described, including selection and location of supply outlets.

THE object of air distribution within a space is to create comfort for the occupants. In order to obtain comfort conditions, standard limits have been established which recognize the effects of the elements which influence comfort. These limits are termed effective temperatures or proper combinations of room temperature, humidity, and air motion which cannot be read but only felt by the occupants. The term *effective temperature* comprises the effect of these elements on the surface of the human body. Any change in the proper combination of room temperature, humidity, and air motion may result in discomfort for the occupants. For example, discomfort may be caused by too high or too low a room temperature, by excessive air motion, or by a lack of uniformity of air or temperature distribution within a space.

A winter air conditioning or forced air heating system is only as good as its air distribution system. The type and size of the furnace unit itself does not insure a good heating system, as is sometimes believed. The furnace should be properly sized for the correct heat input and output to handle the particular job. Assuming that a furnace has been properly selected for the heating load, air distribution then becomes a major factor in the degree of comfort obtained from a heating system. In selecting a furnace, both the heating load and the volume of air required, must be considered. A system may deliver the required quantity of air and yet fail to give satisfactory comfort because of improper air distribution.

## Calculate Air Volume

Before supply outlets for a system can be properly selected, the correct volume of air to be supplied to each room should be calculated. A well-designed winter air conditioning system should provide four to six air changes per hour. This means that the air in the space would be completely changed every 10 to 15 minutes and that air motion throughout the occupied zone will be between 15 to 25 fpm. This is considered to be proper limits of air motion for comfort.

The type of residence and its location also have a part in determining the air requirements of a system. For instance, in houses equipped with single glass and located where the outside design temperatures range from -10 to 10 F, the temperature of the supply air should be between 130 to 150 F; if equipped with double

glass, 115 to 130 F. Where outside design temperatures are above 10 F, the supply air temperature for single glass construction should be between 115 to 130 F, and for double glass 100 to 120 F.

If a system is not designed for cooling, the higher temperature should be used, as this cuts down the quantity of air and consequently smaller ducts may be installed at less cost. If, on the other hand, a system is to be designed for both heating and cooling, it is better to use the lower temperature, which increases the quantity of air. Generally speaking more air is required for cooling than for heating and selecting the lower air temperatures will bring the quantities of air calculated for both heating and cooling into closer balance.

No matter how much air is required, it must be conveyed to various locations by ductwork. It is good practice to hold air velocities throughout the duct system under 800 fpm. The maximum, 800 fpm, may be calculated for the mains close to the furnace but lower velocities should be maintained in the branches. By keeping velocities within these limits, the cost of the ductwork is kept to a minimum and objectionable noises from high velocities will be eliminated.

The formula for calculating the quantity of air to be circulated in a winter air conditioning system is as follows:

$$\frac{\text{Btu}}{1.08 \times \text{Td}} = \text{cfm}$$

where

Btu = hourly heat loss

1.08 = 60 (minutes)  $\times$  .24 (specific heat of air)  
 $\times$  .075 (weight of one cubic foot of air)

Td = temperature difference (supply air temperature minus return air temperature)

Example: The heat loss of a room is 15,120 Btu, the supply air enters at 140 F, and the return air leaves at 70 F.

Required: The cfm to heat the room at design conditions.

$$\frac{15,120}{1.08 \times (140 - 70)} = 200 \text{ cfm}$$

The cfm for each room is calculated separately and then totaled to obtain the cfm required for the system.

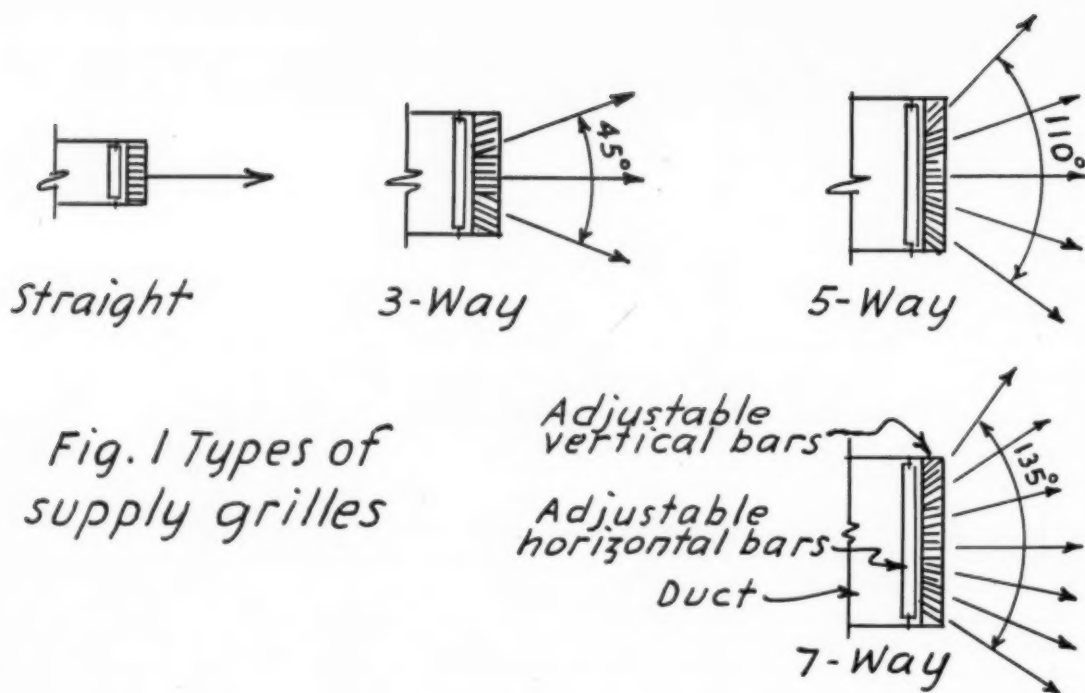


Fig. 1 Types of supply grilles

In residential systems it is advisable to limit air delivery to a maximum of approximately 200 cfm for each supply outlet. If more than 200 cfm is required for a room, install two or more outlets. This applies especially to living rooms where more than one supply outlet should always be used. In general, there is a tendency to use as few supply outlets as possible. This is the wrong approach to a good heating system.

#### Location of Outlets

Good air distribution consists of the correct number and location of supply outlets to distribute and properly diffuse the air to the right areas. The location of outlets is determined by a simple rule, which is, that the warmest air should be supplied to the coolest area. Conversely, for cooling, the coolest should be supplied to the warmest area. When these points are kept in mind, air distribution for any job is simplified.

Whether a winter air conditioning system is designed for cooling or not, the correct location of the supply outlets should be from 7 to 8 ft above the floor. Also, supply outlets should be kept 1 ft below the ceiling to prevent streaking and smudging and to give space for the air stream to expand as it leaves the outlet.

Supply outlets located on high sidewalls should be selected to meet the following conditions:

1. Height of grille above the floor
2. Throw
3. Shape of room

The velocity of the air leaving grilles placed 7 to 8 ft above the floor should be high enough for the air stream to reach the other side of the room and the stream should be kept above a line 6 ft above the floor. This line represents the upper limit of the occupied zone.

The discharge velocity at the grille should be selected in accordance with the required throw or the

distance from the grille to the opposite wall at which the air stream velocity has reduced sufficiently. The shorter the throw, the lower is the velocity required, and the longer the throw, the higher the velocity. It is necessary to select the correct throw so that the air stream is held above the occupied zone until its velocity dissipates. Supply outlets should be equipped with vertical vanes in the front plane behind which are horizontal vanes. Both are important as many conditions of draftiness can be alleviated by adjusting one or the other.

#### Direct Flow to Suit Room

The third point to consider in selecting grilles is whether a straight or directional flow type is necessary. See Fig. 1. The straight flow grille causes practically no spread of the air stream; the 3-way, a spread of approximately 45°; the 5-way, 110°; the 7-way, 135°. Selection of the different types depends entirely upon the shape of the area in which the air is to be diffused. For example, in Fig. 2 a straight flow grille (a) has been selected for a long, narrow room in which the grille has been mounted on the narrow wall. The application of 3-way deflection in a square room is indicated in (b). In long, narrow rooms, grilles may be placed on the long wall as in (c) and (d) where 5-way and 7-way deflections are applicable. Sometimes it is advantageous to install two 3-way grilles as in (e). To obtain correct air distribution, grilles with adjustable vanes permit shaping the air stream to conform to the room.

The velocities of straight flow grilles and directional flow grilles with different deflections, but with equal areas, will vary if throw is to remain constant. A straight flow grille will require the lowest velocity for a given throw, and an increase in velocity will be required as the angle of deflection increases. A 7-way deflection will require the highest velocity for a given throw.

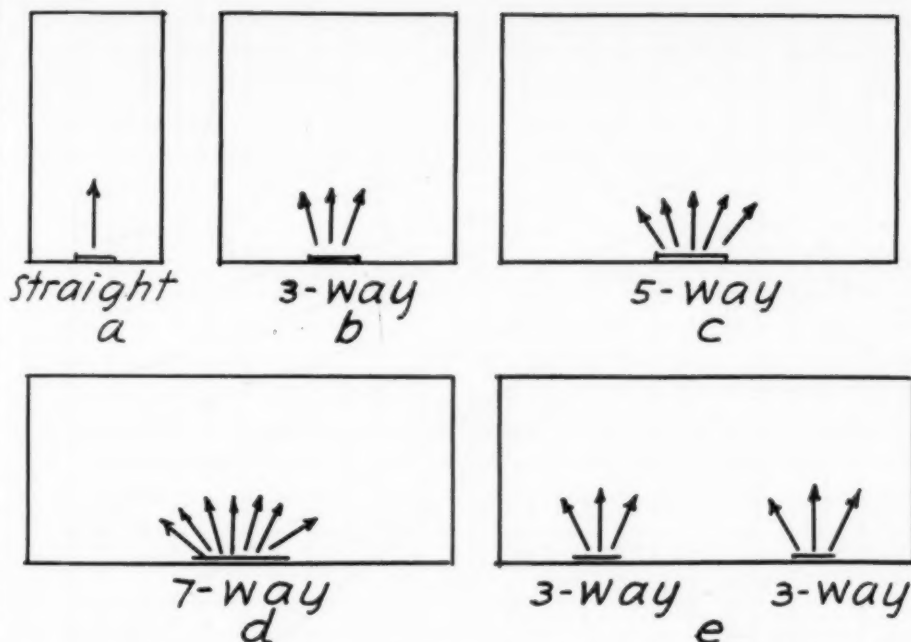


Fig. 2 Types and location of grilles for various types of space

drafts. The length and width of a grille refer to its dimensions inside its border. The area within the border less the area taken up by the vanes is known as free area. Grilles having a free area of 80 per cent are obtainable and should be selected to keep sizes within a good range.

In order to facilitate the selection of proper sized grilles for residential winter air conditioning systems, the writer has developed a Chart for Selection of Grilles (Page 90). An example readily discloses its use.

Example: A volume of 200 cfm is discharged from a grille mounted on a sidewall 7 ft above the floor. The throw to the opposite wall is 10 ft.

Required: What size straight flow, 3-way, 5-way, and 7-way grille should be selected?

Starting at the desired throw of 10 ft, point A of Part 1, move horizontally to the intersection with the curve of a straight flow grille, point B. Proceed upward to point C of Part 2, where the velocity is indicated as 300 fpm. Now continue upward to point D on the 200 cfm curve, the required volume of air. Move horizontally to the right and select the width (height) of the grille. Assuming an aspect ratio of  $1\frac{1}{2}$  to 1 is desired, point E at the intersection with the 8 in. width in Part 3 apparently fulfills this requirement. Now proceed downward to the length of the grille, in-

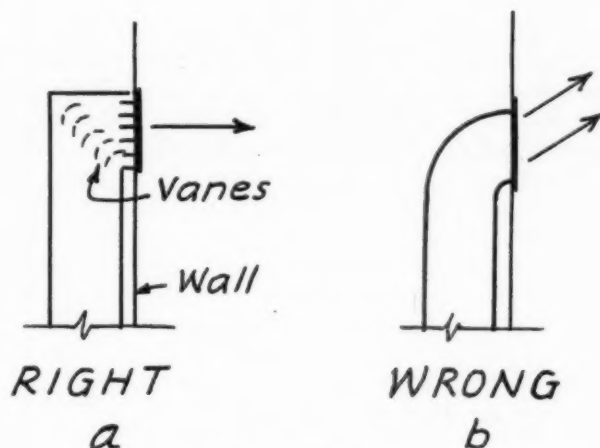


Fig. 3

To avoid objectionable noise, velocities through side-wall grilles should not exceed 700 fpm. Velocities between 300 and 600 fpm are preferable and the residual, or terminal, velocity at the opposite wall must not exceed 50 fpm. If the residual velocity is greater than 50 fpm, drafts will occur in the occupied zone along the wall opposite from the supply outlet. In cases where supply outlets are installed immediately above the baseboard, velocities should not exceed 250 fpm.

The size of the supply outlets is very important to good air distribution. It is good practice to select grilles with an aspect ratio from approximately  $1\frac{1}{2}$  to 1 up to 6 to 1. This means that the length should range from  $1\frac{1}{2}$  to 6 times the width. For example, a straight flow grille should be selected at  $1\frac{1}{2}$  to 1; a 3-way, 3 to 1; a 5-way, 4 to 1; and a 7-way, 6 to 1. The latter will fan the air out into the room in a thin horizontal stream and its greater spread will alleviate

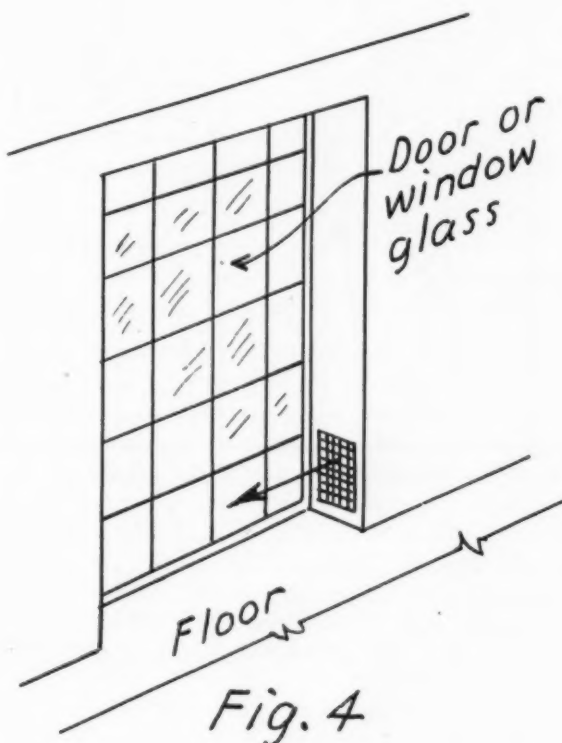
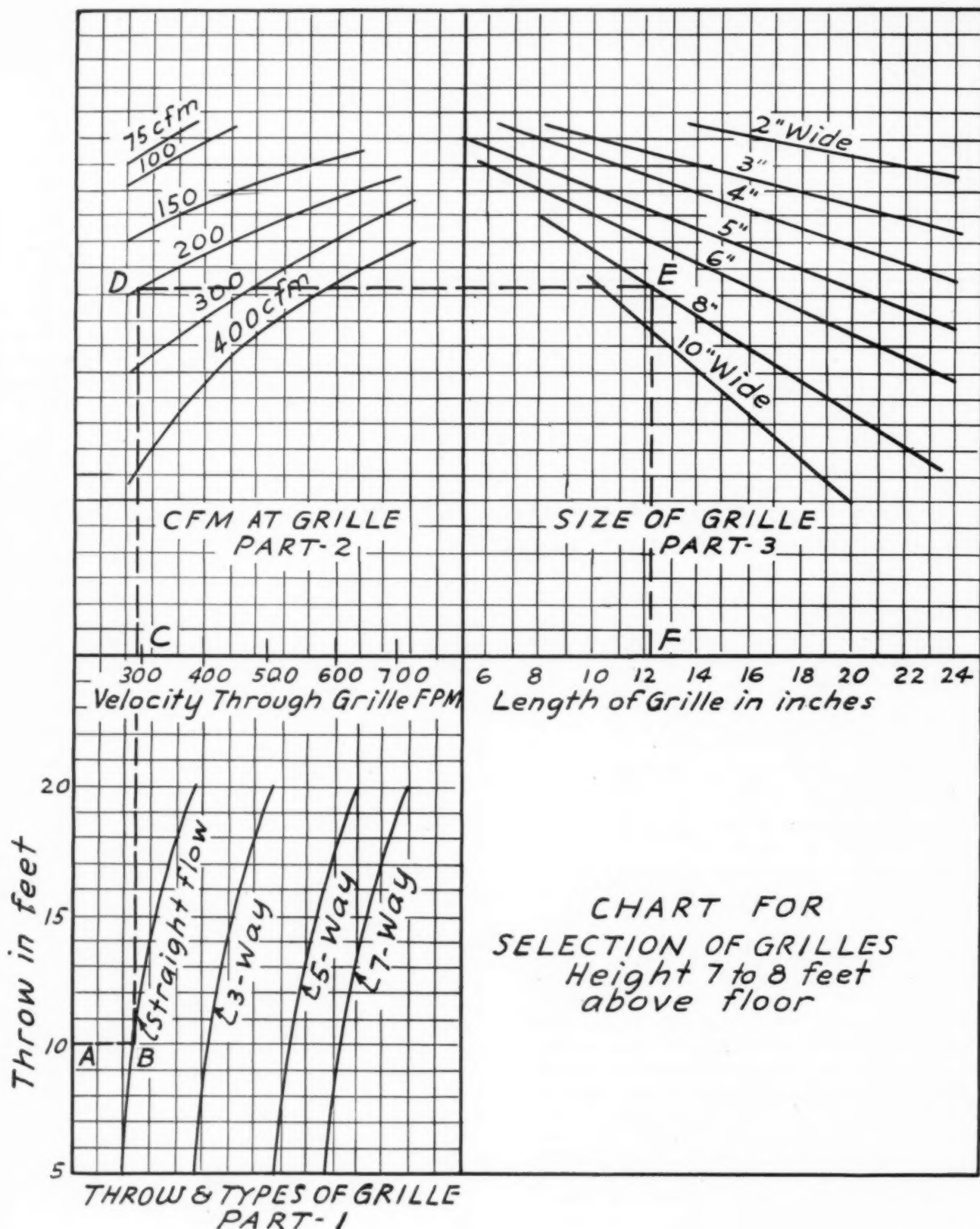


Fig. 4





indicated by point F which is 12 in. Thus, an 8 x 12 in. straight flow grille is required.

In a similar manner, grilles 16 x 5 in., 16 x 4 in., and 18 x 3 in. may be selected for 3-way, 5-way, and 7-way deflections respectively.

No matter how carefully the grille selection has been made, the throat of the duct approaching the grille

must help to obtain the proper diffusion. One of the major reasons for unsatisfactory air distribution is a lack of consideration of this point. The correct and wrong methods of duct approach are shown in Fig. 3. As indicated, ordinary elbows in back of grilles do not permit the air stream to diffuse properly. The correct

(Please turn to page 168)

# Temperature Distribution In a Test House

## With Various Heating Devices (Part II)

RICHARD S. DILL and PAUL R. ACHENBACH  
Washington, D. C.

Second in a series of articles describing tests conducted  
on various means of heating a small, low cost house and  
the results obtained.

THE oil burning warm air furnace was of the cabinet type having a top outlet and a side inlet above the floor. A fan capable of delivering about 650 cfm against a static pressure of 0.12 in. of water, circulated air around a single heat-transfer cylinder. The furnace had a natural-draft, pot-type burner 13 in. in diameter, operating on high and low fire as required. The operation of the furnace was completely automatic, with the room thermostat controlling the fuel supply to the burner, and the bonnet temperature controlling the operation of the circulating fan. The rate of oil supply to the burner on high fire was 0.55 gal/hr, and the manufacturer's output rating on high fire was 55,000 Btuh. This heater was connected to the plenum chamber and duct system previously described. A view of the furnace in the position used for the tests is shown in Fig. 4.

The results obtained on this heating device are summarized in table 5.

### *Jacketed Gas Fired Space Heater*

The gas fired space heater was jacketed and was equipped with a fan 18 in. in diameter mounted on the back. The fan forced air through openings in a cast iron heat-transfer element and a circular grille 21½ in. in diameter with deflecting vanes. The grille was located in front of the jacket and could be rotated in the jacket to deliver warm air in a desired direction.

The burner was controlled by a room thermostat, and the fan operation was controlled by the temperature of the heat-transfer element. The heater was placed in the living room in front of the fireplace opening for the test. The movement of air to and from the other rooms took place through the open doorways.

The specimen heater is shown in Fig. 5, in the position used for the tests.

The results obtained on this heating device are summarized in table 6.

### *Jacketed Oil Fired Space Heater*

The oil fired space heater was jacketed. It was equipped with a fan to circulate air downward around the combustion drum and deliver it near the floor through a grille in the front and one in the side of the heater. The heater was also used to heat the bungalow by gravity circulation, with the warm air being delivered from the top of the heater. The unit was equipped with a natural-draft pot-type burner with a diameter of 13 in. The oil supply to this unit was manually controlled. It had a maximum output of about 35,000 Btuh. This heater also was placed in the living room in front of the fireplace opening, and the heat was permitted to flow into the other rooms through the open doorways.

The results obtained on this heating device are summarized in tables 7 and 8.

### *Single Gas Burning Gravity Floor Furnace*

The single gas burning floor furnace of the gravity type was installed in the floor of the hall in the conventional manner. It had a rated input of 70,000 Btuh. The warmed air was discharged from the furnace and the cold air was returned to the furnace through a grille measuring 26 by 38 in. The return air passed over the floor and entered the hall from all the rooms through open doorways.

Figs. 6 and 7 show views of the furnace from under the floor and above the floor, respectively. Fig. 7 is typical of the installation of all the floor furnaces tested in the hall.

The results obtained on this heating device are summarized in table 9.

\*—Building Materials & Structures Report BMS 108, National Bureau of Standards

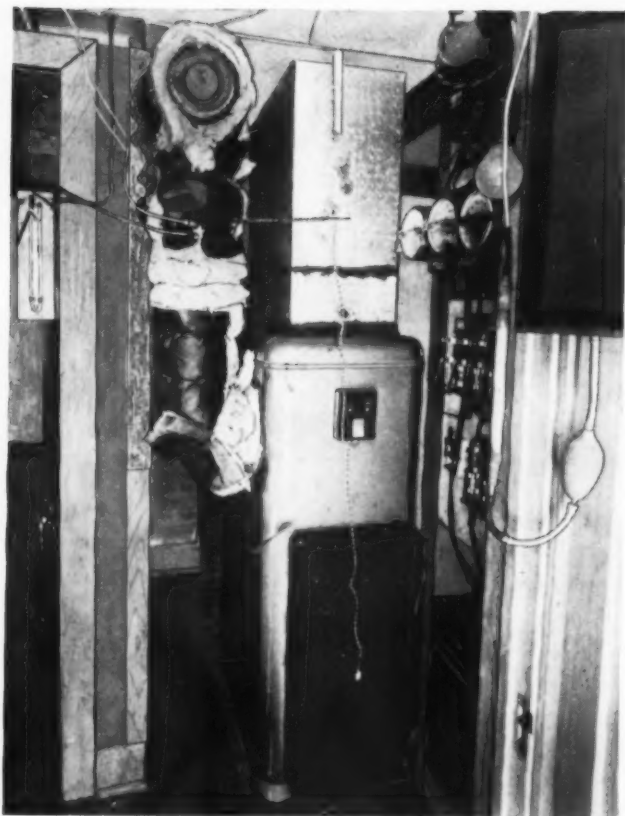


Fig. 4.—Oil burning warm air furnace in the position used for the tests

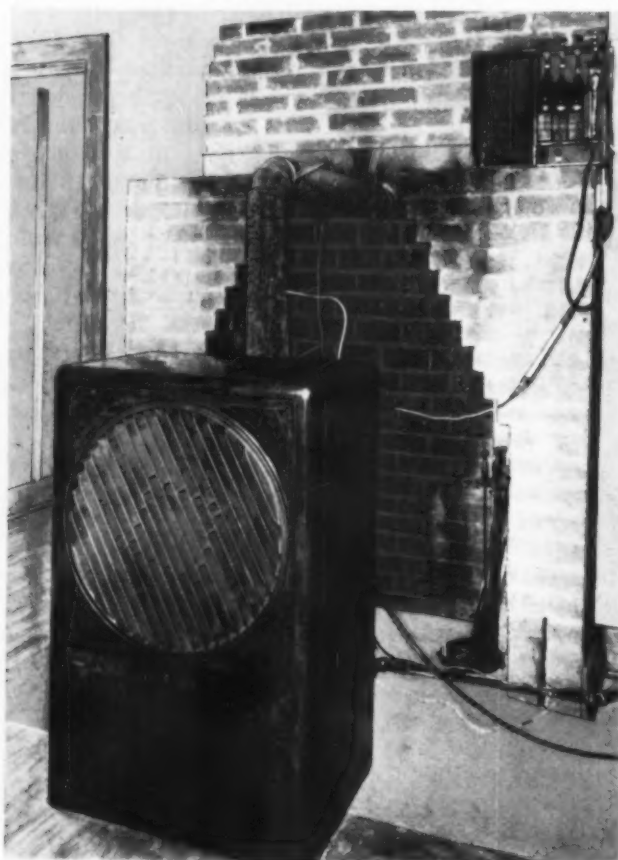


Fig. 5.—Jacketed gas fired space heater in the position used for the tests

TABLE 5.—Temperature distribution in a test bungalow heated by oil fired furnace located in utility space with air distributed by intermittent forced circulation through plenum chamber

Height above Floor	Kitchen	Living room	North bed-room	South bed-room	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 22 to 26 F)							
in.	° F	° F	° F	° F	° F	° F	° F
2.....	57	60	59	63	55	59	8
30.....	70	71	70	71	69	70	2
60.....	82	83	83	83	83	83	1
78.....	89	88	93	90	97	91	9
94.....	97	94	97	92	101	96	9
Basement...	.....	.....	.....	.....	.....	45	.....
Attic.....	.....	.....	.....	.....	.....	56	.....

Temperature Difference

2 to 60.....	25	23	24	20	28	24	.....
2 to 94.....	40	34	38	29	46	37	.....

Room Temperature (Outside Temperature 34 to 38 F)

2.....	62	62	63	64	60	62	4
30.....	70	70	70	70	71	70	1
60.....	77	76	78	78	80	78	4
78.....	83	81	85	82	86	83	5
94.....	87	84	89	84	92	87	8
Basement...	.....	.....	.....	.....	.....	47	.....
Attic.....	.....	.....	.....	.....	.....	58	.....

Temperature Difference

2 to 60.....	15	14	15	14	20	16	.....
2 to 94.....	25	22	26	20	32	25	.....

TABLE 6.—Temperature distribution in a test bungalow heated by a jacketed gas fired space heater located in living room with air distributed by fan.

Height above Floor	Kitchen	Living room	North bed-room	South bed-room	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 23 F)							
in.	° F	° F	° F	° F	° F	° F	° F
2.....	56	60	55	57	52	56	8
30.....	69	68	67	66	65	67	4
60.....	80	91	76	76	74	79	17
78.....	84	94	80	79	79	83	15
94.....	87	98	82	80	79	85	19
Basement...	.....	.....	.....	.....	.....	43	.....
Attic.....	.....	.....	.....	.....	.....	43	.....

Temperature Difference

2 to 60.....	24	31	21	19	22	23	.....
2 to 94.....	31	38	27	23	27	29	.....

Room Temperature (Outside Temperature 37 F)

2.....	59	65	58	62	57	60	8
30.....	69	70	68	69	66	68	4
60.....	76	85	74	74	72	76	13
78.....	80	89	78	77	76	80	13
94.....	82	91	79	78	77	81	14
Basement...	.....	.....	.....	.....	.....	47	.....
Attic.....	.....	.....	.....	.....	.....	61	.....

Temperature Difference

2 to 60.....	17	20	16	12	15	16	.....
2 to 94.....	23	26	21	16	20	21	.....



TABLE 7.—Temperature distribution in a test bungalow heated by jacketed oil fired space heater located in living room with air distributed by gravity circulation

Height above Floor	Kitchen	Living room	North bed-room	South bed-room	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 43 F)							
in.	° F	° F	° F	° F	° F	° F	° F
2 .....	63	70	63	66	58	64	12
30 .....	69	73	70	72	68	70	5
60 .....	77	81	76	77	74	77	7
78 .....	87	112	82	82	80	89	32
94 .....	96	123	86	87	84	95	39
Basement .....	.....	.....	.....	.....	.....	52	.....
Attic .....	.....	.....	.....	.....	.....	67	.....
Temperature Difference							
2 to 60 .....	14	11	13	11	16	13	.....
2 to 94 .....	33	53	23	21	26	31	.....
Room Temperature (Outside Temperature 48 F)							
2 .....	70	75	69	70	67	70	8
30 .....	76	78	75	75	75	76	3
60 .....	83	86	81	82	81	83	5
78 .....	92	112	87	86	86	93	26
94 .....	98	123	89	90	89	98	34
Basement .....	.....	.....	.....	.....	.....	54	.....
Attic .....	.....	.....	.....	.....	.....	70	.....
Temperature Difference							
2 to 60 .....	13	11	12	12	14	12	.....
2 to 94 .....	28	48	20	20	22	28	.....

TABLE 8.—Temperature distribution in a test bungalow heated by jacketed oil fired space heater located in living room with air distributed by a fan inside heater jacket (downward flow)

Height above Floor	Kitchen	Living room	North bed-room	South bed-room	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 48 F)							
in.	° F	° F	° F	° F	° F	° F	° F
2 .....	66	87	64	66	62	69	25
30 .....	77	87	76	77	75	78	12
60 .....	85	91	81	82	81	84	10
78 .....	87	94	84	85	85	87	10
94 .....	90	101	85	86	85	89	16
Basement .....	.....	.....	.....	.....	.....	52	.....
Attic .....	.....	.....	.....	.....	.....	66	.....
Temperature Difference							
2 to 60 .....	19	4	17	16	19	15	.....
2 to 94 .....	24	14	21	20	23	20	.....

### Two Gas Burning Gravity Floor Furnaces

The two gas burning gravity floor furnaces were operated simultaneously in the bungalow. Each had a rated input of 35,000 Btuh. The warm air outlet and the cold air return of each furnace were at floor level and were incorporated in a single register measuring 18 by 32 in. One furnace was installed in the hall, and

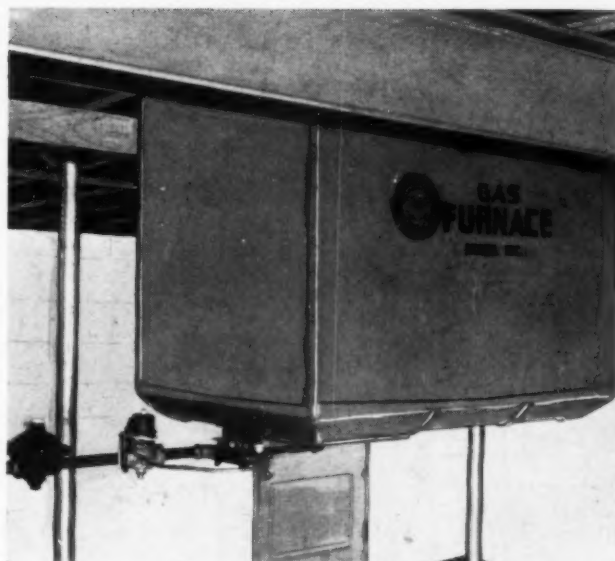


Fig. 6.—Single gas burning floor furnace, gravity type, shown from under the floor



Fig. 7.—Single gas burning floor furnace, gravity type, shown from above the floor

the other in the living room under the south windows 15 in. from the wall. Both furnaces were controlled during the tests by one room thermostat, located on an inside wall of the living room.

The results obtained on these heating devices are summarized in table 10. (Next page)

TABLE 9.—Temperature distribution in a test bungalow heated by gas fired floor furnace with air distributed by gravity circulation

Height above Floor	Kitchen	Living room	North bed-room	South bed-room	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 34 F)							
<i>in.</i>	<i>°F</i>	<i>°F</i>	<i>°F</i>	<i>°F</i>	<i>°F</i>	<i>°F</i>	<i>°F</i>
2.....	60	60	60	61	57	60	4
30.....	69	68	69	70	67	69	3
60.....	75	76	78	78	76	77	3
78.....	79	79	83	80	83	81	4
94.....	82	82	83	81	84	82	3
Basement...	.....	.....	.....	.....	.....	50	.....
Attic.....	.....	.....	.....	.....	.....	49	.....
Temperature Difference							
2 to 60.....	15	16	18	17	19	17	.....
2 to 94.....	22	22	23	20	27	22	.....
Room Temperature (Outside Temperature 42 F)							
2.....	61	61	62	64	59	61	5
30.....	69	69	70	71	68	69	3
60.....	75	75	78	77	76	76	3
78.....	79	78	82	79	82	80	4
94.....	82	80	82	80	83	81	3
Basement...	.....	.....	.....	.....	.....	49	.....
Attic.....	.....	.....	.....	.....	.....	57	.....
Temperature Difference							
2 to 60.....	14	14	16	13	17	15	.....
2 to 94.....	21	19	20	16	24	20	.....

TABLE 10.—Temperature distribution in a test bungalow heated by two gas fired floor furnaces, one in the living room, the other in the hallway, gravity circulation

Height above Floor	Kitchen	Living room	North bed-room	South bed-room	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 27 F)							
<i>in.</i>	<i>°F</i>	<i>°F</i>	<i>°F</i>	<i>°F</i>	<i>°F</i>	<i>°F</i>	<i>°F</i>
2.....	60	62	59	61	58	60	4
30.....	68	69	67	69	66	68	3
60.....	74	78	73	75	72	74	6
78.....	77	80	76	76	75	77	5
94.....	77	81	76	76	75	77	6
Basement...	.....	.....	.....	.....	.....	53	.....
Attic.....	.....	.....	.....	.....	.....	44	.....
Temperature Difference							
2 to 60.....	14	16	14	14	14	14	.....
2 to 94.....	17	19	17	15	17	17	.....
Room Temperature (Outside Temperature 38 F)							
2.....	61	63	60	62	59	61	4
30.....	69	70	68	69	67	69	3
60.....	73	77	72	74	72	74	5
78.....	75	78	75	74	74	75	4
94.....	75	79	75	75	74	76	5
Basement...	.....	.....	.....	.....	.....	52	.....
Attic.....	.....	.....	.....	.....	.....	50	.....
Temperature Difference							
2 to 60.....	12	14	12	12	13	13	.....
2 to 94.....	14	16	15	13	15	15	.....



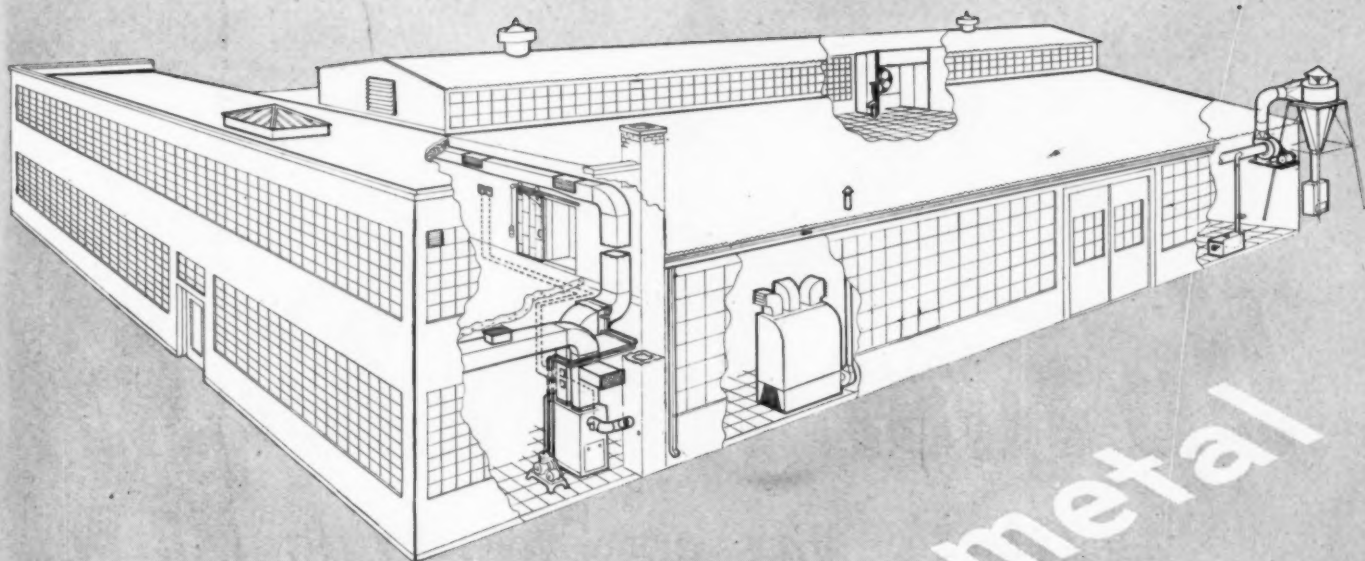
Fig. 8—Manner in which cold air returns were connected to the casing of the gas burning floor furnace with circulating fan

#### Gas Burning Floor Furnace (With Circulating Fan)

The gas burning floor furnace with the circulating fan was installed in the hall. A plenum chamber 6 in. high was built over the furnace above the floor level and suitable openings permitted the warmed air to be

forced toward the doorways of the surrounding rooms just above the floor. In practice, the furnace and its plenum would be placed in a closet or under a stairway adjacent to the hall, but this location was only simu-

(Please turn to page 174)



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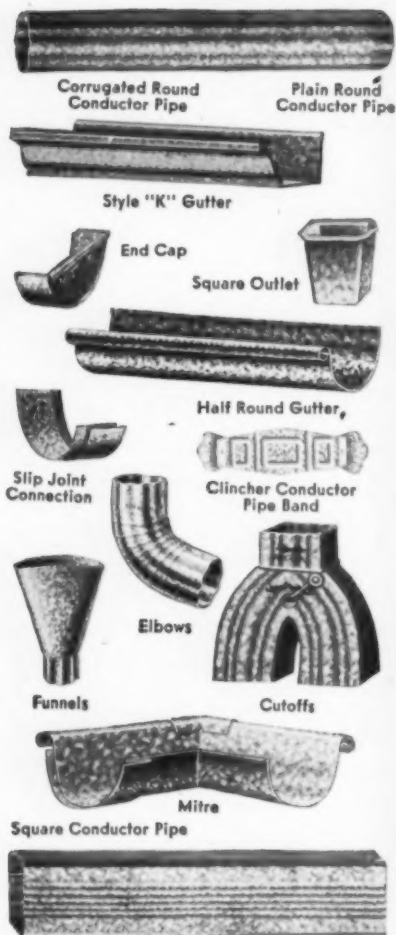


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Fig. 1. Fan equipment in the system.

## Pneumatic Wool Conveying

H. M. NICHOLS  
Hyde Park, Mass.

**A**N INTERESTING example of the use of a fan system to convey wool in a woolen mill is a recent installation at the Lebanon Woolen Mills, Lebanon, Tennessee. The accompanying illustrations Figs. 1, 2, and 3 show the conveying fan taking the wool from a Sargent opener, delivering it to process vats, and a layout of the system.

Prior to this pneumatic conveying installation it was necessary for men to stuff the wool into burlap bags, as it was processed at the opener. These bags were then trucked to either the vats or storage bins, depending on the operating schedule. The elimination of this laborious work has resulted in a worthwhile saving in man-hours and a corresponding decrease in operating costs.

### Conveying Principles

Clean (scoured wool) conveying systems are usually designed for 3500 fpm air velocity and 85 cu ft of air per lb of wool conveyed, figured for the maximum feed in any short interval. Also, where the wool is taken

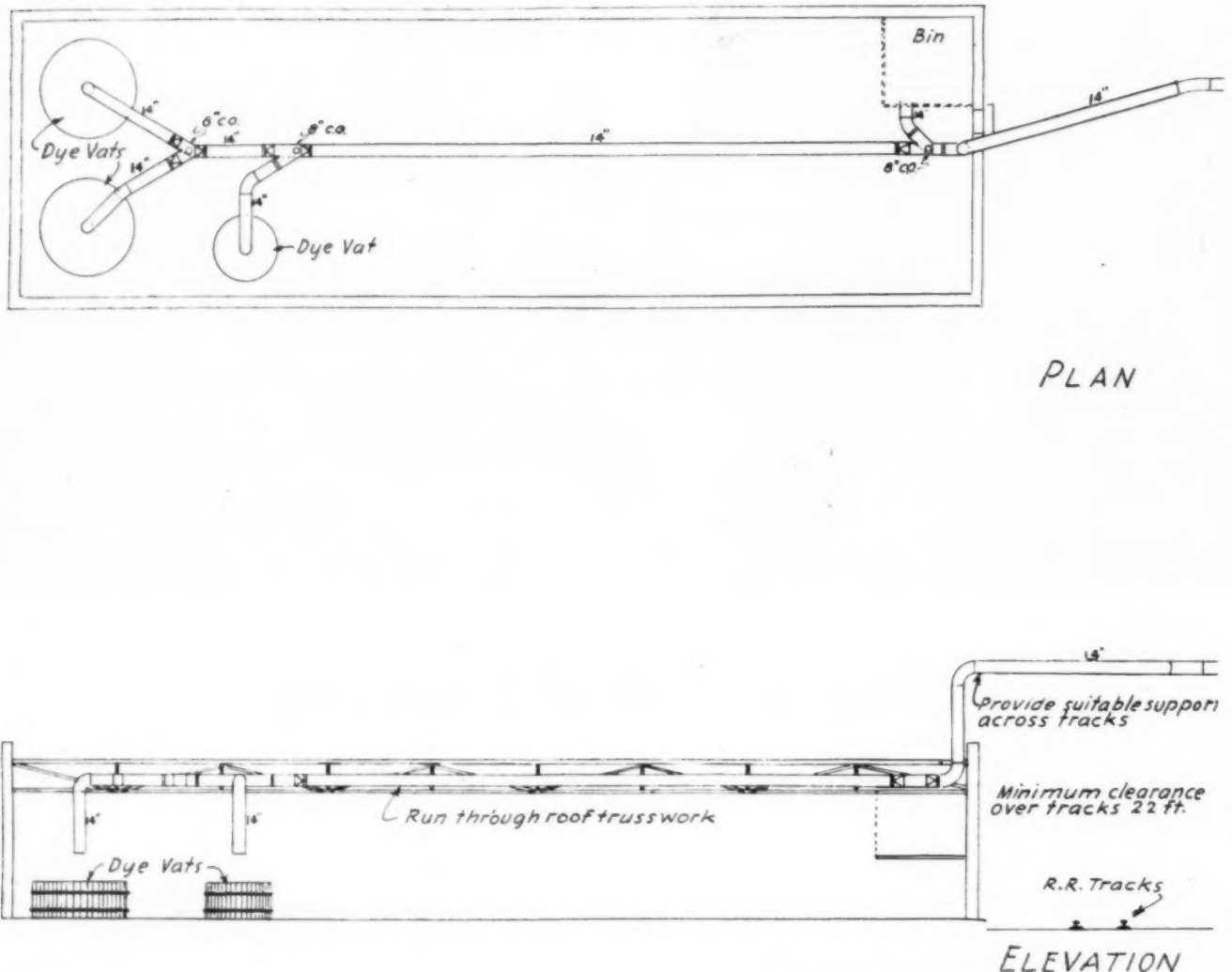
from a picker or opener there is the additional requirement of a minimum pipe diameter of 12 in. The reason for the minimum pipe diameter of 12 in. is that opening and picking machines have a considerable fan action, and for satisfactory operation the pipes leading from these machines must be of sufficient size to take away the air developed by the rotating cylinders, otherwise a back pressure will be set up which will cause material to be blown out of the machines.

Raw (grease wool) conveying systems are usually designed for a minimum conveying velocity of 5000 fpm and about 70 cfm per lb of wool to be conveyed. Raw wool is much heavier than scoured wool and also the stock tends to cling together in large pieces which accounts for the much higher conveying velocity. Minimum pipe diameter is usually held to 14 in. since grease from the wool will gradually collect on the inside of the pipe and reduce the effective diameter.

After a few years of operation it is usually necessary to take the pipe down and clean out the accumulation of grease. For this reason where large quantities of raw wool are conveyed it is advantageous to provide

The author is assistant manager of the Industrial Department, Sturtevant Division, Westinghouse Electric Corp.

Fig. 2 Layout of the System



flanged pipe for convenience in cleaning.

Low grade wools, including wool and shoddy mixtures which have been heavily treated with oil emulsion to facilitate processing are also more difficult to convey than normal, clean wool and require velocities similar to grease wool and about 70 cfm per lb of stock conveyed. In such cases however, oversize pipes are not so essential as for raw wool, since the material does not build up on the inside of the pipe to the same extent as natural wool grease.

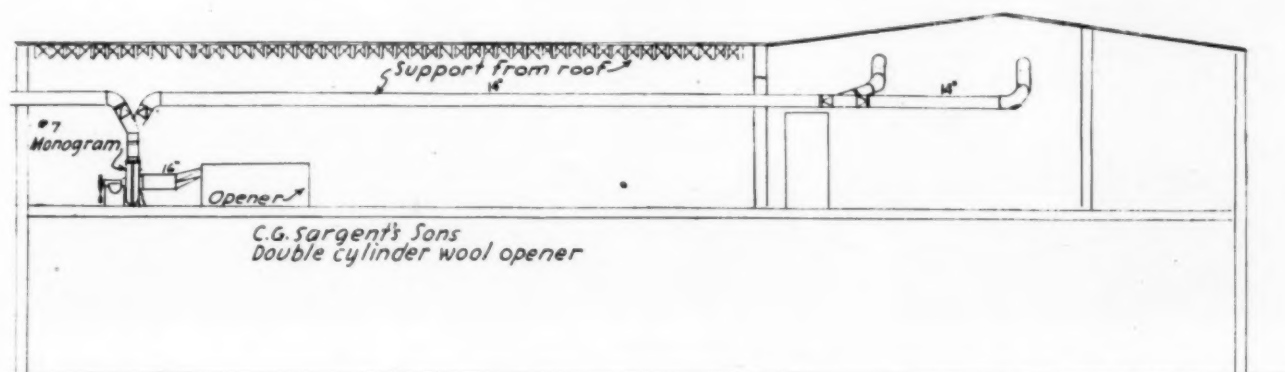
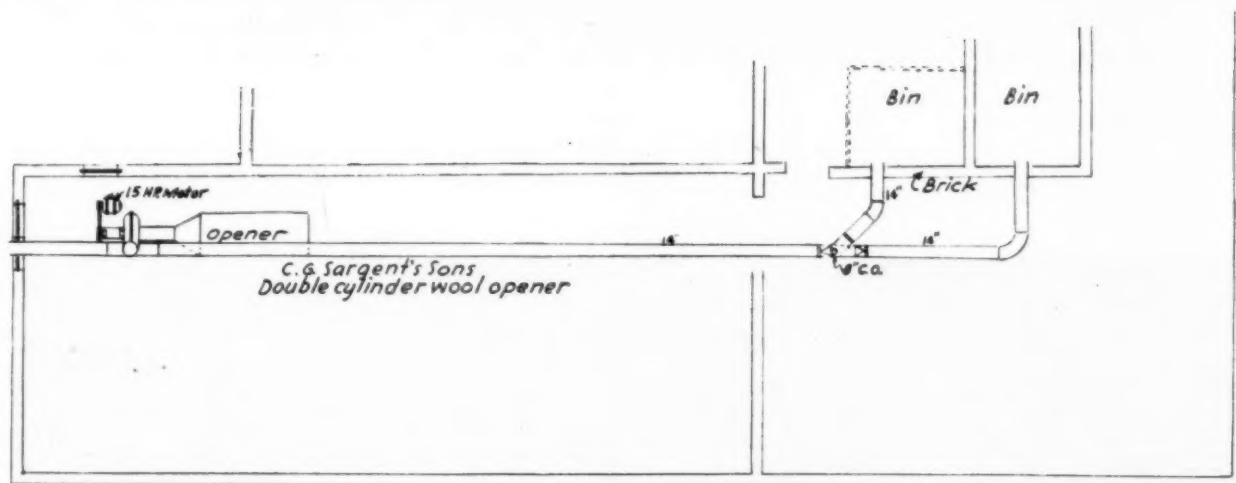
#### Design Details for the Lebanon System

The system was designed to convey pneumatically 1000 lb per hour of either raw (grease wool) or clean wool from a Sargent opener to various bins and vats as shown on the above layout Fig. 2. Distribution to the various points is controlled by manually operated switches as indicated on the layout.

The problem was unusual since the design called for handling grease wool and clean wool through the same system. This required a minimum conveying velocity of 5000 fpm to handle the grease wool, and also a minimum air quantity of 85 cfm per pound of wool to move the more bulky clean wool. An additional requirement was 14 in. minimum pipe diameter to allow for decrease in effective diameter by accumulation of wool grease on the inside of the pipe.

Wool switches have a tendency to leak a small amount of air into the unused branches. This leakage is caused by the natural clearances in the switches and also the difficulty in closing the switches absolutely tight due to clinging of stock to the switch blades. Where there are multiple switches, as in the case of the Lebanon job, this leakage can be appreciable and result in serious reduction in conveying velocity near the end of the lines, unless compensated for. To com-





compensate for any probable leakage losses at the switches it was decided to figure the system for an initial conveying velocity of 5500 fpm which should assure a minimum velocity of 5000 fpm at all points.

#### Calculations

Minimum requirements for the system: 5500 fpm velocity, 85 cfm per lb of wool handled, and a pipe diameter of 14 in.

The number of lbs of wool per minute

$$1000 \div 60 = 16.7$$

Volume of air required at 85 cfm per lb of wool

$$85 \times 16.7 = 1420 \text{ cfm}$$

Capacity of 14 in. diameter pipe at 5500 fpm velocity

$$5500 \times 1.07 = 5880 \text{ cfm}$$

Since each calculated air volume represents a minimum requirement, 1420 cfm to move 16.7 lbs of wool and 5880 cfm to maintain the velocity, the larger is

selected as the basis for the design of the system.

If the air volume requirement based on the lbs of wool had exceeded the capacity of a 14 in. pipe at 5500 fpm velocity, it would have been necessary to increase the diameter to handle the required air volume.

#### System Resistance

By inspection of the layout (Fig. 2) it is apparent that the duct of greatest resistance is the branch and main extending from the fan to the farthest vat. Starting at that point and working back to the fan we obtain approximately 135 ft of 14 in. pipe and 5 elbows. The effective resistance of each elbow can be taken as the equivalent of 8 diameters of pipe. Therefore, the equivalent length of each 14 in. elbow, expressed in feet, is

$$8 \times \frac{14}{12} = 9.3 \text{ ft.}$$

The total effective length of elbows is therefore

$$9.3 \times 5 = 46.5 \text{ ft}$$

The total effective pipe length including elbows is

$$135 + 47 = 182 \text{ ft}$$

Friction drop through this pipe is obtained from the equation

$$P = \frac{L}{50} \times \frac{12}{d} \times i$$

is of uniform diameter and the discharge is from an open end pipe.

Therefore, the total maintained resistance equivalent to the required fan pressure is

$$5.9 + 1.89 = 7.79 \text{ in.}$$

These figures were rounded off and the fan performance was chosen for 5900 cfm at 8 in. static pressure.

The conveying fan was an exhaustor equipped with steel-plate wool wheel and driven through V-belts by a



Here is a view of the discharge end of the collecting system. Study of the layout on the previous pages will indicate the position of this part of the line.

where

P = friction drop in in. of water

L = effective length of pipe in ft

d = diameter of pipe in in.

i = velocity head in in. of water

$$\text{or } \left( \frac{V}{4000} \right)^2$$

Where V = velocity in fpm

The required velocity head for this system is

$$i = \left( \frac{5500}{4000} \right)^2 = 1.89 \text{ in.}$$

Solving for friction drop

$$P = \frac{182}{50} \times \frac{12}{14} \times 1.89 = 5.9 \text{ in.}$$

The work required to get the air into the system is taken as equivalent to one velocity head or 1.89 in.

There are no other resistance factors since the pipe

is of uniform diameter and the discharge is from an open end pipe. The motor was provided with slide rails to facilitate belt adjustment.

This wool conveying system has been in operation for some time now with complete satisfaction. The only suggestion about the system has concerned the high velocity at the discharge. This velocity is required for the heavy raw wool but there is a tendency when handling light, clean wool for some of it to blow around the room, rather than fall directly into the vats. As it has developed the mill will handle very little of the heavy grease wool and a simple solution of this problem is to slow down the fan, which can be readily accomplished by changing one of the V-sheaves. An ideal arrangement would be a variable pitch sheave, so that, if at any time the mill desires to go back to grease wool, the fan speed could be increased by a simple adjustment of the sheave.

# Scientific Shop Layout (VI)

ERNEST E. ZIDECK  
Sheet Metal Consulting Engineer

The sixth of a series designed to present the latest in shop layouts and techniques for efficient production to our readers. The author's experience in sheet metal design and production has enabled him to show step-by-step the way in which a sheet metal shop can be made to operate most effectively and economically.

THE company we are to discuss in this article had been manufacturing electric ranges before the war in a single story factory built for the purpose in the 20's. While engaged in war production the company managed to devote some time to redesigning their product and testing three new models, so that when reconversion time came everything was ready on paper. The three new models had been broken down to their components and production drawings made.

General office area was reduced by ten feet for the necessary enlargement of the shop facilities. This ten foot space was utilized for the grouping and installation of washrooms which had formerly been scattered all over the plant. These washrooms, as placed, separated the offices from the shop and muffled the noise made by the presses and other heavy machinery. A conveyor system was planned and two types were installed: an overhead system for conveying parts to and through the paint spraying and enameling rooms; and a rail system for the floor, the rails buried in the concrete (Fig. 1) with shop trucks for conveying materials and parts between the machines and work benches at the extreme left in the drawing. Lower trucks are used to move the product through the various steps of assembly. A track was laid longitudinally, skirting the washrooms and connecting the display room at the far end of the building with the shipping door at the other end. Another track entered the testing room as shown.

## Types of Products

The newly designed ranges differed in size and equipment; one standard model without clock controls, another partially controlled, and a third deluxe model completely automatic. The control instruments were obtained from an outside supplier but all other components, except the electrical accessories and fasteners, had been designed to be produced in the shop.

Tests had shown that the top plates, the rings and the leads which formerly had been castings, performed better if pressed from sheet metal. Thus the new designs specified pressed steel for these parts. Except for the heavier gauge and exposed parts, the rest was almost exclusively light sheet metal fabrication, with

only a few pieces of light gauge angle used for the bottom support and for reinforcements. The legs were stamped out of sheet metal and spotwelded to the bottom frame, which had been made of angles welded together. This frame, complete with legs, was the first item produced and it went through the entire production line, including enameling and was loaded on a shop truck at station 9 in Fig. 1. The interior base parts and the exterior panels were fastened to the frame by interior bolts so that no bolt heads were visible from the outside. The partitions and bottoms were processed at *D*, enameled and then locked to the outside panels. This panel work was performed at station 6, the parts were fitted together and then moved to the enameling booth so that when they arrived at station 9 they were assembled at that stage of the process.

## Some Parts Pressed

Pressing out the top plates, rings and leads was done in the blanking presses at 3 and in the press brake at 5. No welding was required for these parts but the finishing specifications were strict and several coats of enamel were necessary to meet them.

At station 3 the bottom frame pieces were cut to size and shape, loaded on the shop truck and sent to 6 where the pieces were aligned in a jib and then welded at station 7. The welds were ground down at 8 to fit into a drill jig operated at station 6 and small bolt holes were drilled in the interior flange of the frame. After this step the legs and frame were locked into a jib and welded together with preliminary finishing at station 8. Then the assembly was hooked on the conveyor at *B* for enameling at 8-A.

The legs had been blanked at station 3 and formed at 5 and this sequence held true for other channel and angle parts, also. Panels were sheared at the larger machines to specified sizes and then notched and drilled as required for the particular piece being made. This work was all done according to templates. The upper frame was cut at the larger shear, mitred at 4 (*Text continues on page 108, drawings will be found on next two pages.*)



Fig. 1 Sheet metal electric range manufacture

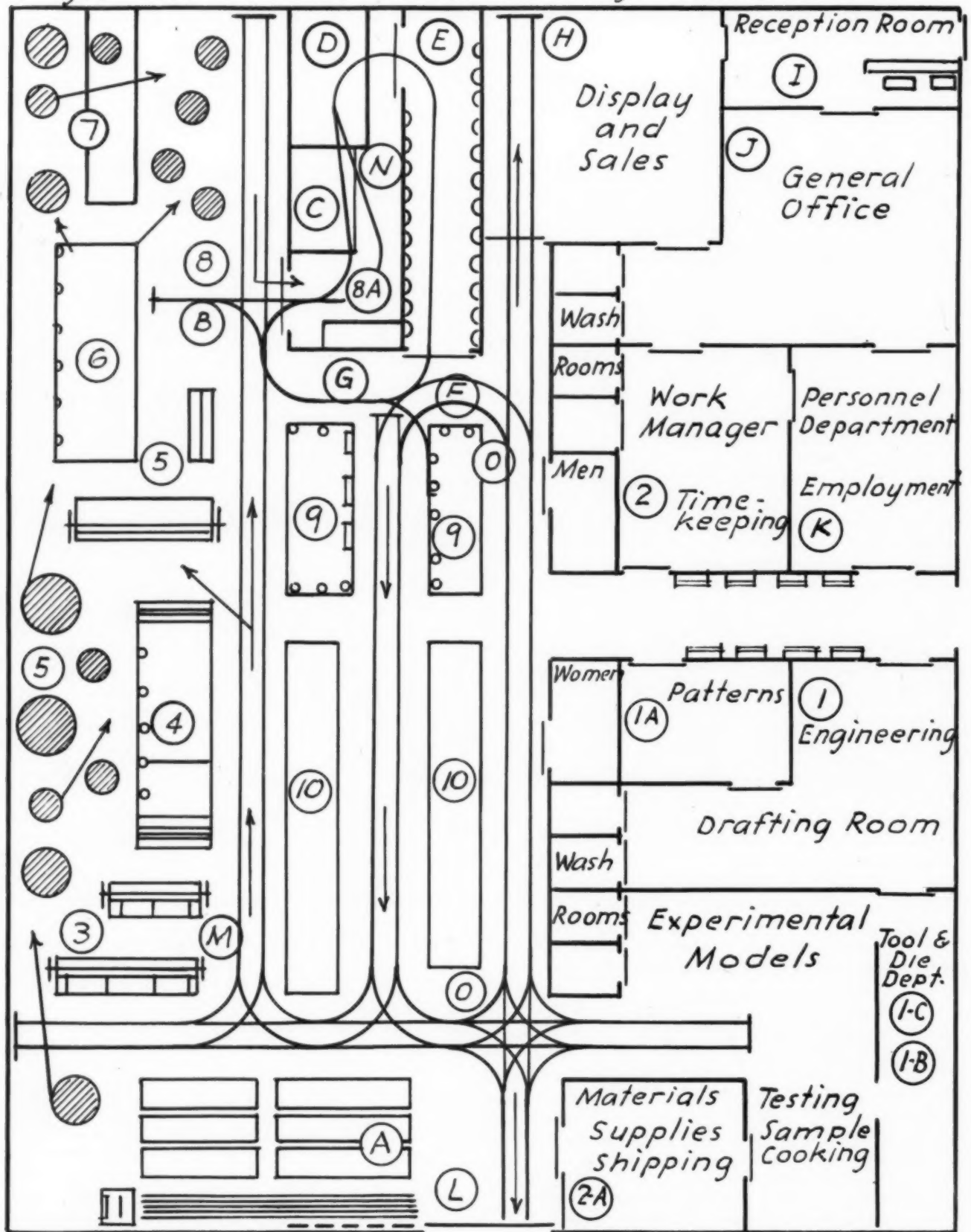
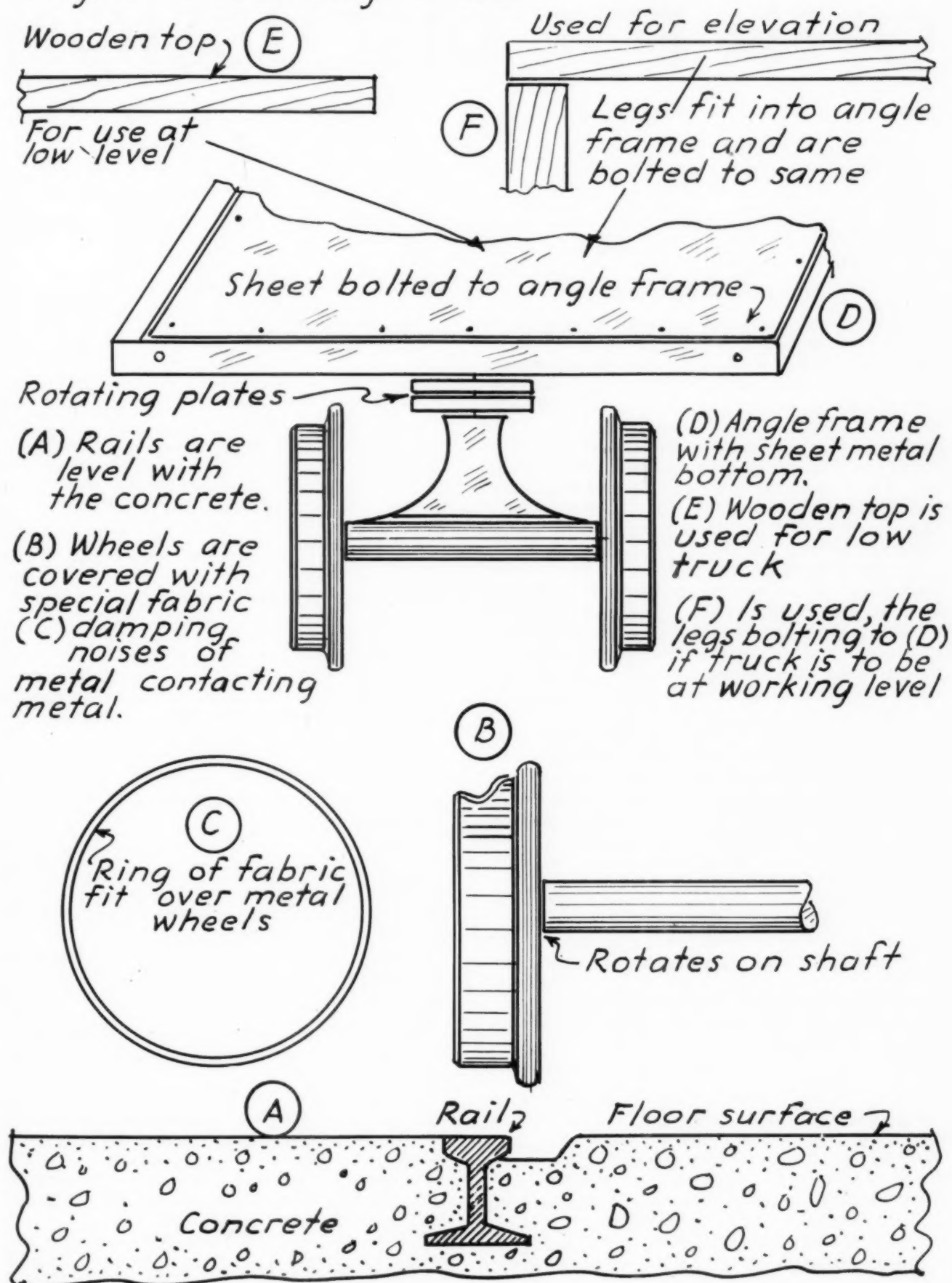


Fig. 2 Assembly truck



# OPEN FOR DISCUSSION

## Slip Joint Deductions

A sheet metal contractor has asked if a chart is available listing allowances for slip joints of round pipe. These allowances are made while shearing sheets for this type of ductwork, so the small end of one section will slip snugly into the large end of the next section.

Most shops have established arbitrary allowances, or deductions from the girth of the sheet, for different gauges and diameters of piping. However, there are no standard deductions for the different combinations in common use and the fit between sections is not uniformly tight.

As this reader states the problem: If four or five sheet metal workers are making fittings of a specific diameter, one may allow (say)  $\frac{1}{4}$  in. for the slip joint deduction while another allows (say)  $\frac{3}{16}$  to  $\frac{1}{2}$  in. This may result in joints that are either too loose or so tight that considerable time is spent in joining sections. This latter occurs especially when the ductwork is erected in close quarters.

Further, the reader suggests that there would be a common advantage if these deductions were standardized so that all sheet metal men would allow a uniform reduction in the diameter of the small end, conforming of course to the gauge of the metal and the diameter of the pipe. Thus, all round piping would tend to fit snugly, one section into the other, no matter who fabricated the material.

This problem was submitted to Ernest E. Zideck, a regular contributor to *AMERICAN ARTISAN*, who is thoroughly experienced in many phases of sheet metal fabrication. After analysis and study, Mr. Zideck has developed the chart entitled "Shearing Deductions for Round Pipe Slip Joints" on the facing page.

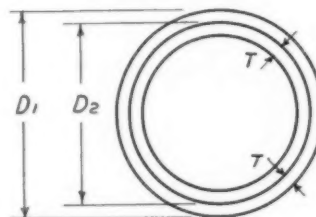
From the common equation for the circumference of a circle

$$C = \pi D$$

the exact deduction may be calculated by subtracting the circumference of the large end from that of the small end. However, any practical application will show that this is an unwieldy procedure. It requires the subtraction of two thicknesses of metal from the larger diameter, the difference usually being a decimal that is multiplied by the constant 3.1416.

Further mathematical analysis shows that the exact deduction is also a function of the metal thickness which may be multiplied by an arbitrary constant.

The constant for the exact deduction may be increased to allow for the snug sliding fit that is ordinarily required.



A section through a slip joint showing the outside diameter of the outer pipe,  $D_1$ ; the outside diameter of the inner pipe,  $D_2$ ; and the thickness of the metal,  $T$ .

From the figure, it will be observed that the difference between the circumferences may be expressed

$$(1) \quad C_1 - C_2 = \pi(D_1 - D_2)$$

As stated above, this equation does not serve convenience. However, since the inside diameter is a function of the outside diameter and the thickness of the metal, the inside diameter may be expressed

$$(2) \quad D_2 = D_1 - 2T$$

By substitution, equation (1) becomes

$$(3) \quad C_1 - C_2 = \pi D_1 - \pi(D_1 - 2T)$$

Simplifying

$$(4) \quad C_1 - C_2 = 2\pi T$$

Equation (4) expresses the difference between the diameters as a function of the thickness of the metal, the exact difference being 6.2832T or 6.2832 times the thickness of the metal.

In the chart, the constant 6.2832 has been arbitrarily increased to 7 to allow for a snug sliding fit

$$\text{Shearing Deduction} = 7T$$

This constant is easy to remember, although experience, machinery, and other conditions may suggest slight variations.

The exact decimal deductions (column 5) in the chart are 7 times the thickness of the metal (column 2). The fractional deductions (column 4) have been rounded off to the closest convenient fraction. The scale (column 3) represents the length of the fraction.


Readers are invited to comment on their experiences with the chart.

Charts mounted on heavy cardboard may be purchased by addressing the Editor, *AMERICAN ARTISAN*, 6 North Michigan Avenue, Chicago 2, Illinois.



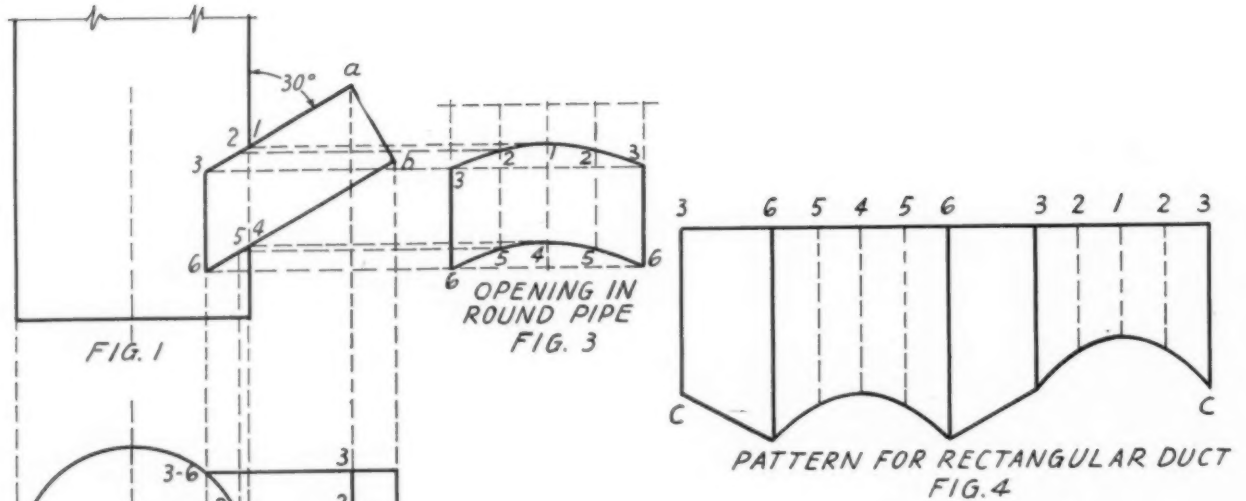
# SHEARING DEDUCTIONS

## FOR ROUND PIPE SLIP JOINTS

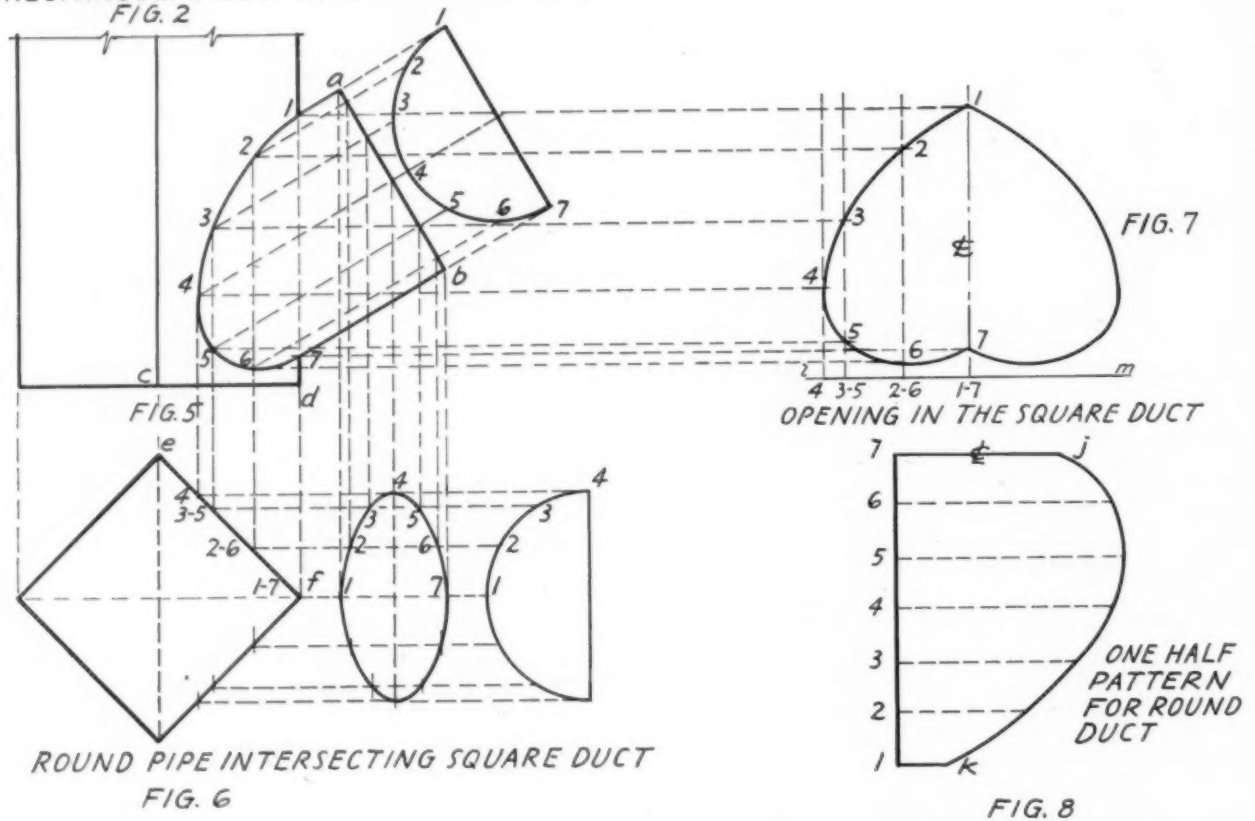
U.S. STANDARD GAUGE THICKNESS		DEDUCTION		
		SCALE	FRACTION	DECIMAL
28	.0156		$\frac{7}{64}$	.1092
26	.0187		$\frac{1}{8}$	.1309
24	.025		$\frac{3}{16}$	.175
22	.0312		$\frac{7}{32}$	.2184
20	.0375		$\frac{1}{4}$	.2625
18	.05		$\frac{11}{32}$	.35
16	.0625		$\frac{7}{16}$	.4375
14	.0781		$\frac{9}{16}$	.5467
12	.1094		$\frac{3}{4}$	.7658
11	.125		$\frac{7}{8}$	.875
10	.1406		$\frac{31}{32}$	.9842

Prepared By Ernest E. Zideck

# Sheet Metal Pattern



RECTANGULAR DUCT INTERSECTING ROUND PIPE  
FIG. 2



Developing Duct Intersections—Wm. Neubecker

# Pattern Development for Heavy Gauge Blow Pipe Fittings

WILLIAM NEUBECKER  
Brooklyn, New York

## DEVELOPING DUCT INTERSECTIONS

**T**HE upper half of the full page opposite shows the method of developing the patterns for a rectangular duct intersecting a round pipe at an angle of 30 deg. Material to be used is 16 gauge metal and the fitting is to be riveted or butt welded.

Draw the plan and elevation as shown in Fig. 1 and 2. Divide the rectangular duct in the plan view, Fig. 2, into four equal parts, 3-2-1-2-3. From these divisions draw lines at right angles to 3-3 intersecting the round pipe as shown by 3-6, 2-5, 1-4, 2-3, 3-6 and from these divisions erect perpendicular lines to intersect the rectangular duct in elevation, Fig. 1, at 1, 2, 3, 4, 5, and 6. This completes the plan and elevation.

### Pattern for Opening in Round Duct

Draw a horizontal line indefinitely as  $x-y$  in Fig. 3 and place on it the girth of the divisions shown on the round pipe in plan, 3-6 to 2-5 to 1-4, etc. At these divisions draw perpendicular lines and intersect them with lines projected from points 1 to 6 in Fig. 1. Trace the curved lines through the points of intersection and the result will be the desired pattern.

### Pattern for the Rectangular Duct

Take the girth of the rectangular duct and place it on a horizontal line as shown in Fig. 4. Divide the top and bottom of the rectangular duct into the divisions shown in Fig. 2. Step off the distance  $a-b$  in elevation on this line as indicated by 3-6 and 6-3. From these points draw lines at right angles indefinitely. Now measuring from the line  $a-b$  in elevation take the distances to points 1-6 *respectively* and strike them off on the lines as shown. Then draw lines through the points of intersection and 3-c-c-3 will be the net pattern shape. Allow riveting flange if needed.

The method of developing the patterns for a round pipe intersecting a square duct is shown in Fig. 5-6.

Draw the elevation, Fig. 5, showing the square duct, line  $a-b$ ,  $a-1$  and  $b-7$  with the miter line to be established. Draw the plan view, Fig. 6 with the square duct and the diameter of the round pipe projected out to the line 4-x; the ellipse that is formed in the end view

is to be established. Draw a semi-circle adjacent to the round pipe in Fig. 5 and mark it off in equal divisions 1 to 7. From these points project lines indefinitely at right angles to 1-7 and intersecting  $a-b$  as indicated.

Draw a semi-circle opposite the plan view of the fitting, as in Fig. 6, and space it in equal divisions. Project lines across from points 1 to 4 to intersect the square duct at points 1-7, 2-6, 3-5 and 4. Drop perpendiculars from the points where the lines from points 1-7 intersect the line  $a-b$  in Fig. 5. Trace the ellipse through the points of intersection so established.

### Developing Miter Line

From the points 1-7, 2-6, 3-5 and 4 in Fig. 6 erect perpendiculars to intersect the lines which have projected from 1 to 7 of the semi-circle and passing through the line  $a-b$ . Trace a line through the points of intersection and the result will be the miter line between the round and square ducts.

### Opening in the Square Duct

Draw a line parallel to  $c-d$  as 1-m in Fig. 7 and on it lay off the divisions on the line  $e-f$  in Fig. 6; 1-7 to 2-6, 2-6 to 3-5 and 3-5 to 4. Erect perpendiculars from these points. Then project horizontal lines across from the miter line in Fig. 5, points 1 to 7, and trace one-half the heart-shaped figure using the intersections which result. The other half of the opening is identical.

### Pattern for the Round Duct

Take the girth of the semi-circle in Fig. 5 and place it on the vertical lines 1-7 in six divisions as in Fig. 8. From the points established draw lines at right angles. Then measuring from the line  $a-b$  take the distances to the intersections 1 to 7 of the miter line and strike them off on the horizontal lines drawn from 1-7 in Fig. 8. Trace the curved line from  $j-k$ . Then 7-j-k-l is one-half the net pattern. Allowances can be made on the patterns for the type of construction that is to be used.



(From page 101)

and formed in the press brake at station 5. Other component parts arrived at station 6 for insertion into a welding jig for welding and finishing before going into the drill jig at 6 previously described in connection with the lower frame. There was a difference in the next step since the upper frame was carefully finished after drilling and then polished to a high luster.

Several interior panels were blanked at station 3, trimmed at 4 and then moved to 5. Straight panels went from the large shear at 3, through step 4 to the press brake at 5 and then to the welding process at 7 and finishing and polishing at step 8. Handles followed the same procedure up to step 7 where threaded studs were welded to the handles. The welds were ground and polished and the handles enameled, as the next step. Perforated inner panels went through the various steps to arrive at the press brake at station 5 where the perforations were made and the necessary forming was done on the same machine. The fitting done at station 6 consisted largely of alignment for easy assembly after enameling and alignment in jigs for welding and drilling.

#### **Initial Handling of Material**

In studying the drawing of the shop layout (Fig. 1) and the sequence of operations we see that the raw materials are received at *L* and unloaded into area *A*. Structural shapes are stored on racks near the wall and the sheets placed on wooden frames between the wall and the tracks. To the left of the material racks are a saw for cutting angles and channels and a circular shear for shearing discs for the stamping press.

The large power shear across the track handles long sheets, cutting them into the correct size blanks for the panels, while the smaller shear behind it is for the heavier gauge metal required in the top and its accessories. The smallest shear at 4 is used for blanking small parts. It is clear that since all raw materials are handled at this end of the shop any scrap from cutting can be picked up and hauled away without interfering with the work of any other department.

From the shears the materials flow to stations 5 and 6 for forming and fitting. There is quite a bit of extra work required on doors in the way of preparation for handles and hinges and part of this is done at 4 and part of it at 6. It can be seen from the descriptions of the steps taken by the various parts that material flow in this plant has been well arranged to proceed from raw material to finished product with an absolute minimum of back-tracking and waste motion. The floor track contributes to this efficiency and the entire production area along the left wall could hardly be improved.

#### **Latest Type of Oven**

The enameling oven, *E*, is a modern type using large and powerful infra-red bulbs for heat and having insulated walls to retain that heat. Parts are hung on the conveyor at *B*, move through a sliding door into the chamber where the degreasing tank *C* is located, pass through *C* and then are sprayed with a primer at *D*. Moved into the oven the parts travel at a regulated pace, emerging and turning at *G* and re-entering the spraying booth for the required coats of enamel.

At the exit side of the drying oven, *F*, there is a branch of the conveyor which moves finished parts to the benches 9 and then travels back to station *B*. Parts can be examined at *F* and if they are improperly finished they can be hung on the conveyor again and returned to *B* for repair or revision.

#### **Assembly on Benches**

The enameled parts taken from the conveyor are allowed to cool and then assembly of the ranges takes place in the area between the benches. The assembling is done on shop trucks of the proper height and these trucks travel on the rails, as shown (Fig. 2). They move from 9 to 10 and the various parts are added to the ranges as they progress down the line. After the assembly has been completed the ranges are moved into 1-B for inspection and testing. There is usually a preliminary inspection made at the final assembly point. When the range has been approved it is then sent into the display and sales room or moved to an adjoining warehouse.

#### **Engineering New Models**

To backtrack a bit we can consider the engineering phase of the development of new model ranges by this company. The design and drafting work is done in a large room that is labeled 1 in the drawing. The draftsmen lay out patterns for every part that is to go into the new model range. The developmental work on a new model is usually carried on while the shop is working at top speed on the current models. Actually these model changes are more concerned with the appearance of the units than any major alterations in basic design, since that would entail new jigs and dies. The first few units of the new design are assembled using as many of the standard production parts as possible and then various studies are made to determine the possibility of any further changes which would result in a saving of material or production time. The new model is run through cooking tests to record its performance in such details as speed and current consumption. All the data gathered in these tests are used to help improve the product in all ways.

#### **Storage of Tools**

All the master blanks, templates, forming dies and jigs used in making the ranges are stored in room 1-A. These are always kept up to date and any revisions made during production are also made on the corresponding master. Tools and jigs for the new models are made at 1-C and well tested before they go into production.

Pilot models of the new ranges are assembled and tested as described and when the engineers are satisfied that the new models have had all the flaws worked out of them the production line is changed over. The manufacture of this product was chosen for discussion because it involves an extensive use of light sheet metal fabrication.

• Any readers having problems concerning layout of their shop or arrangement of production facilities are invited to submit sketches to Mr. Zideck for consideration as editorial material.—Ed.



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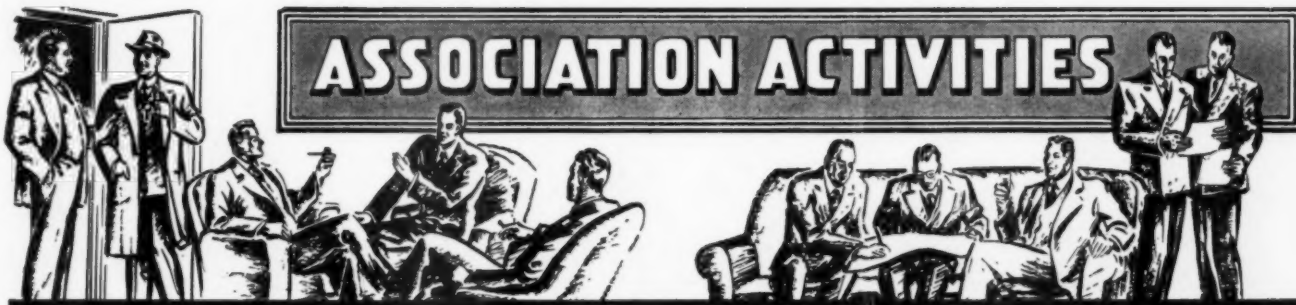


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### Fox Valley

A meeting of the Fox Valley Sheet Metal Contractors' Association was held at Elgin, Illinois, on Tuesday evening, January 18. Officers elected for 1949 are as follows:

President ..... Jack Stowell, Aurora  
 1st Vice President... Burrell Conover, Aurora  
 2nd Vice President... William Klinkey, St. Charles  
 Secretary ..... Don Glossop, Aurora  
 Treasurer ..... Clayton Evellen, Elgin  
 Sergeant at arms... Harry Gengler, Aurora

Trustees for the year are Andrew Linnd, Dundee; Charles King, Geneva; Henry Heffelfinger, Oswego; George Lehnert, Naperville; John Rubo, Batavia; Fred Lamp, Elgin.

### Pennsylvania

Sheet metal and roofing contractors of Pennsylvania have for some time felt the need for an active state organization in which local problems can be presented and discussed. For this reason, these contractors are now taking steps to form a permanent Pennsylvania state association.

On December 18, 1948, A. J. Sabathne of Altoona, who is Pennsylvania representative on the Board of Directors of the SMCNA, called a meeting to which he invited men from all over the state. At this meeting, a letter was formulated to be sent to selected Organization Chairmen from each large population area of the state. These chairmen were invited to attend a meeting in Reading, on February 18 and 19, for the purpose of nominating a slate of officers and setting up a permanent state association. At the December meeting, Mr. Sabathne was elected temporary president, and E. W. Lieberman, of Ambridge, Pa., was made temporary secretary-treasurer.

The February meeting was held at the Abraham Lincoln Hotel in Reading and was well attended by contractors from all over the state. In addition to the appointment of a Nominating Committee and a By-Laws Committee, a slate of officers consisting of a president, two vice presidents, a treasurer, and five directors was nominated and election of officers was scheduled to be held at a convention at Reading, Pa., on November 18 and 19, 1949.

Mr. Lieberman, temporary secretary-treasurer, wishes to urge all sheet metal contractors in Pennsylvania to join this much-needed organization. They will be contacted by letter and by salesmen auxiliary members of the group.

### COMING EVENTS

Mar. 21-23—8th Heating and Air Conditioning Conference, sponsored by the Iowa State College in conjunction with the Iowa Chapter of the American Society of Heating and Ventilating Engineers, and the Sheet Metal Contractors' Association of Iowa. Iowa State College campus, Ames, Iowa. Marvin Gould, conference secretary, Iowa State College, Ames.

Apr. 4-5—Sheet Metal Contractors' Association of Illinois, 35th Annual Convention. Jefferson Hotel, Peoria, Ill. W. R. Shaw, secretary, 695 E. State St., Jacksonville, Ill.

Apr. 4-6—New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association, Inc. Convention and Product Display. Mark Twain Hotel, Elmira. Clarence J. Meyer, Secretary, 567 Genesee St., Buffalo 4.

Apr. 21-23—22nd Annual Convention. Hotel New Yorker, New York City. New York State Society of Professional Engineers, Inc., 1941 Grand Central Terminal, New York 17.

Apr. 29-30—New Jersey Society of Professional Engineers, 25th Annual Convention. Essex House, Newark, N. J. James M. Neri, chairman of committee on exhibits, 86 E. State St., Trenton 8, N. J.

May 5-6—Seventh Annual Anthracite Conference. Lehigh University, Bethlehem, Pa. Anthracite Institute, Wilkes-Barre, Pa.

May 9-11—Sheet Metal Contractors' National Assn., Inc., Annual Convention. Wardman Park Hotel, Washington, D. C. Joseph D. Wilder, Executive Secretary, 170 Division St., Elgin, Ill.

May 9-11—Liquefied Petroleum Gas Assn. Annual Convention and Trade Show. Palmer House, Chicago, Ill. Howard D. White, Exec. Vice President, 11 S. LaSalle St., Chicago 3, Ill.

May 16-20—Oil-Heat Institute, Inc., National Oil Heat Exposition. Mechanics Hall, Boston, Mass. A. E. Hess, managing director, 6 E. 39th St., New York 16, N. Y.

June 2-12—Fourth Annual Construction Industries Exposition and Home Show. Pan-Pacific Auditorium, Los Angeles, Calif. Sponsored by 13 construction industry associations and the Los Angeles Chamber of Commerce. D. D. Durr, executive vice president, 315 W. 9th St., Los Angeles.



Lowell B. Mason

## NHWA SECOND ANNUAL MEETING



President Johnson

**L**OWELL B. MASON, acting chairman of the Federal Trade Commission, made his second recent appearance before the heating industry when he discussed FTC's attitude toward business during the second annual meeting of the National Heating Wholesalers' Association held in the Blackstone Hotel, Chicago, January 25. In his informal manner, Mr. Mason revealed an intimate knowledge of wholesalers' problems and after he finished his discussion, he frankly answered questions from the floor. His informative talk quickly captured the good will of his audience, which arose and applauded when he left the convention room.

Mr. Mason defined FTC as a business man's traffic court which sets up rules so business men can read and follow them. He gave as his reason for appearing before the heating delegates the impressive invitation he received from Executive Secretary Richard M. Colegrove in which it was stated, "What we want to do is to obey the law and we would like to know what the law is so we can obey it."

"I don't think any country," Mr. Mason said, "and certainly not America, cares to live under jurisdiction where we apply the law to one group differently than we do to another. While the members of my staff say they are not going to apply the import of these five (Supreme Court) decisions against everybody, they are only going after those where the ratio of the freight bill is proportionately large to the total cost of the installed article and therefore, if you manufacture pins and needles, you do not have to worry, according to the staff."

"Any law we have in this country should apply with equality to a man whether he makes pins and needles or hand bills or heating units."

### Decisions Affect Pricing

"I am not going to discuss the details of these five decisions. You men are engineers and wholesalers. I am not going to discuss them individually, but let me tell you what the five cases are. They are very easy to remember because they each deal with one commodity that begins with the letter 'C': the electrical Conduit decision; the Cement decision, which is the one you hear a lot about; the Corn products decision; the Crepe paper decision; and the Salt decision. I spell 'Salt' with a soft 'C' because it is easier to remember. Those are the five C's."

"As you all know, the cement decision is the one which prohibits freight absorption. Of course, if we enforced that law against you fellows who are buying

furnaces from manufacturers who are standing the tab on the freight bill, you would have to go down and pay the freight bill. That is the law as it is today and I do not think anybody disagrees with me."

The speaker then went on to explain that freight absorption is out. Also, that the crepe paper decision held zone prices to be illegal. The electrical conduit decision ruled that there must not be a conspiracy to fix prices.

"Telling a group of business men they must not conspire to fix prices," Mr. Mason continued, "is like telling a man he should love his country. I always suspect a man who goes around like that because it is too much like flag waving and bragging about how he goes to church. Those things are fundamental and we accept them as principles for business men. As a matter of fact, every smart business man knows that a conspiracy to fix prices is a deadening hand because it stops competition and would get us into a situation like the

### Officers

President.....Charles Bird, Cincinnati, Ohio  
Vice President....Jules C. Berger, Green Bay, Wis.  
Treasurer.....Walter J. Joy, Jr., Chicago, Ill.  
Exec. Secretary...R. M. Colegrove, Pittsburgh, Pa.

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John E. Phillips .....Philadelphia, Pa.  
W. H. Rigby .....Boston, Mass.  
John Robertson .....Alliance, Ohio  
J. E. Eckstein .....Pittsburgh, Pa.  
O. P. Brauer .....St. Louis, Mo.

#### Two Year Term

A. K. Anderson .....Toledo, Ohio  
E. C. Simmons .....Detroit, Mich.  
Geo. F. Wheelock ....Birmingham, Ala.  
A. S. Weiant .....Portland, Ore.  
Harry F. Haldeman ...Los Angeles, Calif.

#### Three Year Term

A. G. Earnshaw .....Mansfield, Ohio  
John B. Fehlig, Jr. ....Kansas City, Mo.  
Glenn A. Ashburn ....Culver City, Calif.  
Harrison Somerville ...Washington, D. C.  
W. E. Nesbit .....Omaha, Nebr.

one in England where they are tremendously worried because everything is ideal, nice and comfortable, and nobody goes broke and nobody makes any money. The whole nation will just go broke.

"I think you will find fundamentally we have two cross purposes down in Washington. We have had the Sherman Law and the Federal Trade Commission Act, which were passed for the purpose of increasing competition. Maybe it makes it tough on you fellows. As far as I am concerned, the kind of an economy that you want to live in and the kind I want to live in is the kind of economy that encourages you to give the best that you can to the customer for as little as you can. The man in the trade association who says that we want to stabilize industry, we want to cut out all of this competition and to have everything nice and easy for us is the one who has the philosophy heading towards the British concept. It will lead to a nationalization of industry and it will lead to the freezing of the avenues of trade. In turn, we could find ourselves in the dolorous condition which Great Britain is now faced with and don't think they don't know it."

During the question and answer period following Mr. Mason's talk, the following are typical of the problems on which the wholesalers were seeking advice:

**MEMBER:** Suppose I have a customer right next door to me and I sell to him as a wholesaler. Then I have another customer ten miles away. I send my own truck or hire a trucking company to deliver the furnace ten miles away. The price is the same to both of them. How is it going to affect me?

#### **Price Must Reflect Freight**

**MR. MASON:** Do you want my answer or the staff answer? I will give both of them to you and you can take your choice. The staff members say if you own your own truck, then you are in competition with the person who owns a whole fleet of trucks. Since he owns his own trucks, he can cart the furnace all around the country. He is all right because he is not paying any freight, but is doing just that himself. It looks to me like this is a great encouragement for the big guy. I don't know whether you are big or not. (No) So if your one truck breaks down and you want to pay the freight to that fellow who is ten miles off, then you can wheel one outfit across the street in a wheelbarrow, but technically, in my opinion, you are violating the Robinson-Patman Act. Of course, don't worry about it and don't come back to me and say, "Lowell, will you defend me free of charge?" [Laughter]

**MEMBER:** Suppose you legitimately charge a regular trade price, but you add to that the freight and delivery charge and give a dealer a net price, which is the regular trade price plus the freight. Is that violating the law?

**MR. MASON:** Give that to me in dollars and cents. Are you a wholesaler?

**MEMBER:** Yes. Let's say I am selling a piece of equipment for \$60 which costs \$10 to ship, as freight expense, and \$5 for delivery. So I sell it to the dealer for \$75.

**MR. MASON:** You are obeying the law then and if you charge the dealer for the freight you are all right. We won't sue you.



Norman Medvin

Joseph E. Conway

**MEMBER:** You don't break it down as far as delivery or freight.

**MR. MASON:** Is that the price you charged everybody?

**MEMBER:** Yes.

**MR. MASON:** It isn't a question as to how it shows on the bill of lading. That is your price but you sell it for \$60 to the fellow across the street.

**MEMBER:** No, everybody should be treated the same.

**MR. MASON:** Then you are violating the Robinson-Patman Act.

The first session Tuesday morning was gavelled to order by President Arthur H. Johnson who said it is customary for a president to discuss the state of the Union and furnish some dry statistics about what has been done, what is being done, and what is hoped to be done. He said that new officers will guide the affairs of the association in the future and that the association is solvent and exceptionally active.

Getting down to facts about the heating industry, the speaker suggested that wholesalers put themselves in the place of the manufacturers of heating equipment and consider the fact that they have problems in making heating equipment.

"No longer," he said, "are his problems based on heating with coal but he must know all the answers in heating with gas and oil. No longer does he make just a gravity unit, but he must make a unit that will answer the direct and indirect questions in heating. Now that this manufacturer has his stock in trade, he sits down with his accountants and analyzes his costs and decides on the profit he must have. Then and then only does he decide on his policy of selling. Shall he sell direct to the dealer, the wholesaler, the consumer or kindred manufacturers? Let us say he decides to sell to just the wholesalers. So the very first thing he does is arrive at a so-called list price, or shall we call it a dealers' cost. In arriving at that list price he takes his cost and adds on what he just must get for a profit and then he decides for the wholesalers just what gross profit they shall have and out comes the answer—the well known list price."

#### **Wholesalers' Profits Are Fixed**

On the other hand, the retiring president pointed out, manufacturers should consider the problems of wholesalers, for they too have had to improve and expand facilities and maintain larger and more diversi-

(Please turn to page 166)



# Code of Fair Practices & Welfare Benefits

## Main Topics at Wisconsin Convention

CLOSE to 500 members, guests, and ladies registered for the 34th annual convention of the Sheet Metal Contractors' Association of Wisconsin, held in the Crystal ballroom of Hotel Schroeder, Milwaukee, February 6-8. A full program of business sessions and entertainment for ladies afforded the delegates a full program which started on Sunday with a meeting of the Board of Directors and convention committees and ended with a banquet on Tuesday evening.

A featured entertainment activity was the Hospitality Room, which has become traditional of Wisconsin's annual event as a period of relaxation and fellowship.

President G. F. Wolff opened Monday's sessions with a welcome to the delegates and an account of his stewardship. Following announcements of the meeting's activities by G. Ritonia, chairman of the convention committee, colored movies illustrating the manufacture and application of aluminum building products completed the morning session.

### *The National Hour*

Monday afternoon the chairman's gavel was turned over to J. D. Wilder, Elgin, Illinois, executive secretary of the Sheet Metal Contractors' National Association to present the association's contribution to the convention program.

The first speaker introduced was Philip Olmen, Chicago, first vice president of the SMCNA and his speech dealt with two important subjects: a code of fair practices for architects and heating engineers and the National Joint Board for Settlement of Jurisdictional Disputes.

### *What the Code Does*

The code of fair practices that has been compiled by the association does not attempt to list *all* the work that is done by the sheet metal contractor but only covers ventilation for human comfort, air conditioning (heating and cooling) and ventilation for industrial processes and industrial spaces. Further, the code asserts that it shall be the right of the sheet metal contractor to fabricate, erect and install mechanical air conditioning systems and to purchase all materials and equipment going into ventilating and air conditioning systems. It also asks that the work to be done by the contractor shall be in separate specifications.

This code is not a one-sided proposition in which the contractor asks for everything and gives nothing but rather it sets up certain areas of activity for the architect and the contractor. Here is what the code defines as the duties of the architect. The architect shall:

Set forth in his plan a clear understanding of the work to be executed.

Complete negotiations for all new incoming utilities and for changes in existing incoming utilities.

Prepare plans and specifications to fulfill the requirements of local and state ordinances.

Set forth in his specifications all facts relating to structural arrangements and inter-relationship between the mechanical trades involved in the project.

Assume full responsibility for any utilization of parts of existing systems and where structural changes are called for, the architect shall obtain the information required and assume responsibility for the changes he orders.

Write specifications which shall not restrict manufactured products to those of just one manufacturer, but so write the specifications that the contractor can substitute equally good products.

Locate all equipment and indicate the sizes of pipes, ducts, conduit and the means of connecting these to equipment.

Clearly indicate the amount and extent of the shop drawings to be prepared by the contractor.

The architect shall be responsible for the performance of the systems he has designed when the contractor has followed his design explicitly.

### *The Contractor's Duties*

Here on the other hand are the things that the contractor is expected to do. The contractor shall:

Carry out exactly the intent of the contract, the plans and the specifications unless he knows from experience that certain provisions are not correct. In this event, the contractor shall call these things to the attention of the architect.

Guarantee his installation against defective materials or workmanship for 12 months after installation.

Obtain the approval of the architect for the materials he proposes to use on the job, wherever these materials depart from the specifications.

Prepare and submit for approval such detailed shop drawings as will show his work and the relationship between his work and that of other trades.

Conduct through the architect any and all negotiations affecting the cost of installation, substitution of materials, delays in installation and other changes.

Agree to make no extra charges unless approved by the architect.

Make the necessary changes and adjustments to place the system in proper operation.

Cooperate insofar as possible with the other trades whose work interlocks with his.

The national association plans to put a copy of this code into the hands of every architect and heating engineer who works with any member of the association. It is recognized that this project is not going to be completely effective in one year or two but a beginning has been made and it will be continued.

The other major topic covered by Mr. Olmen was the present method of settlement of jurisdictional disputes in the construction industry. He explained that the joint board which is now in existence was set up on a voluntary basis by agreement between the unions and employing sections of the industry. Mr. Olmen also expressed the belief that the operation of this board had been so satisfactory that he thought it would be continued whether the Taft-Hartley law remained in effect or was repealed.

### Jurisdictional Procedure

Outlining the trial procedure that is followed by the board, Mr. Olmen emphasized the great cost in time and money that goes into gathering the evidence to support a claim to a certain type of work. The steel roof decking case, won by the sheet metal workers, has been the only case concerning this industry decided so far. One very important case pending is that involving air conditioning units. The steamfitters presented a pile of evidence six inches high to support their claim when the case was opened in November. The SMCNA is engaged in building full scale, working models of the packaged unit and the assembled unit so that the trial board can see how minor the claim of the steamfitter is as compared to that of the sheet metal contractor. Mr. Olmen then closed with the admonition that the services of the board are available to each member of the national association and that several members have been helped by the board in recent months.

### Labor Relations

Next representative of the national association to address the group was Roy H. Dose, St. Paul, chairman of the labor relations committee. Mr. Dose reported on the status of negotiations with the union and said that there had been little accomplished recently because of uncertainty about the nature of labor legislation that might be passed in the next months.

Principal message that Mr. Dose had for the convention was a word of caution to the contractors about bargaining on "fringe" issues in their contracts. He also gave the following figures on the cost of the national welfare plans that have been proposed to congress.

For a married man earning \$4800 a year:

#### Benefit—

Health insurance, free medical attention to the expectant mother, home nursing, doctor's care and hospitalization

Cost to worker	Cost to employer
\$120 a year	\$120 a year

#### Benefit—

Childhood care, school aid, disability payments of \$45 a week for 26 weeks

Cost to worker	Cost to employer
\$24 a year	\$24 a year

### 1949 Officers

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#### Benefit—

Unemployment insurance (fired or quit) \$45 a week for 26 weeks

Cost to worker	Cost to employer
\$36 a year	\$36 a year

#### Benefit—

Retirement income at age 65, maximum \$144.90 with dependents.

Cost to worker	Cost to employer
\$84 a year	\$84 a year

Funeral expenses to the amount of \$289.50 are also included in the coverage of this retirement benefit. Payments are continued to the widow after the worker's death.

Mr. Dose felt that the best way of urging the contractor's present to be very careful about granting the demands of unions was to cite the figures above relating to the proposed national welfare program. If a contractor had already given some of the benefits listed above they would probably be duplicated if the national program went through.

Mr. Wilder again took over the meeting after the end of Mr. Dose's talk and told of some of the recent activities of the national association. He told of the survey and study being conducted on products liability insurance and mentioned that permission had been granted by the George Harms estate to reprint sections of *Standard Practice in Sheet Metal Work*.

### Request from NSRB

Another topic of importance was the recent trip to Washington by Richard E. Walsh, president of the SMCNA for a meeting of the National Security Resources Board. The board requested that the sheet metal industry make an analysis of the regulations that were imposed on the industry during the last war and their effectiveness. Recommendations were asked for ideal rules of operation that would allow the most efficient functioning of the sheet metal industry during any future conflict.

Adjournment followed and the Hospitality Room was opened for all to enjoy.

Tuesday, February 8, the first meeting was at 10 a.m. and reports of the committees of the state association were the order of business. First report was that of the legislation committee headed by A. C. Mantei, Milwaukee. Mr. Mantei spoke briefly of the tremendous tax load that faces all of us if the proposed programs

(Please turn to page 184)



H. W. MEGGS



MAYOR AL FEENEY



MARSHALL ABRAMS



R. M. NELSON

## Indiana Association Talks of Business Problems, Use of Machinery & Panel Heating

**T**HE 31st annual convention of the Sheet Metal and Warm Air Heating Contractors Association of Indiana held in Hotel Severin, Indianapolis, February 3 & 4 proved to be a record-breaker from all points of view. The membership of the association had reached an all-time high, there were more sponsors for the convention than ever before, and the attendance also set a new record.

Thursday afternoon, February 3, President H. W. Meggs, New Castle, called the meeting to order and the contractors were welcomed to the city by Mayor Feeny of Indianapolis.

President Meggs followed the mayor's greetings with his own on behalf of the association and expressed his pleasure at having been able to serve the group for the past two years. He spoke of the hostile climate in which the businessman find himself these days and brought out the need for unity in the association and cooperation with other similar associations of contractors in the construction industry. The Indiana association is a member of the Construction League and finds this affiliation very valuable. He also touched on the value of conventions and the importance to the heating contractor of the *Indoor Comfort* Conferences,

sponsored by the National Warm Air Heating and Air Conditioning Association. Initial announcement was made of the heating course being planned at Purdue University for the spring of 1950.

Next speaker was Marshall Abrams, Indianapolis, executive secretary of the Construction League of Indiana and his topic was "Our Tax Problems." He began his speech by saying that he had been asked to bring to the convention the latest news about taxes and that he was sorry to report that the news was all bad. It was his opinion that the national administration had interpreted the recent election as a "mandate" to punish the employers and small businessmen of the country.

The speaker then explained the monetary burden that would be imposed by the program to rearm Western Europe and by the social legislation listed by President Truman in his addresses to the 81st Congress. Bringing the discussion of legislation down to home ground, Indiana, Mr. Abrams said that the state legislature seemed eager to outdo the national administration in throwing money away. He listed several bills which have been presented to the legislative body that would have serious effects on Indiana contractors. One



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is a state wage and hour law which is designed to regulate both interstate and intrastate commerce and includes a provision setting the minimum wage at 75 cents an hour. There is a bill which would allow the union and the employer to withhold union dues from a worker's paycheck without his approval. Still another bill proposes several amendments to the unemployment compensation act which would tend to increase the payroll tax on the employer and make it easier for a worker to secure compensation fraudulently, if he is so inclined.

There is also a movement to boost the gross income tax in the state in order to pay for a bonus for veterans. This step would have serious repercussions in the construction industry because of the way the state tax pyramids as building materials progress from manufacturer to finished house.

The building industry has been paralyzed by the increase in taxes, according to Mr. Abrams, since the taxes on a \$6,000 house amounted to \$109 in 1939; in 1948 the price of that house had risen to \$12,000 and the tax bill rose to \$1,296. The price of the house went up 100 per cent and the taxes, 1300 per cent. One of his closing points was a comparison between the budget of an individual and that of the government. He said that the individual estimates his income and tries to live within it; the government however, estimates its expenditures and then prepares to tax its people to get the money.

### ***Stainless Steel Profits***

Last speaker of the afternoon was R. M. Nelson of Armco Steel Corp., Middletown, Ohio, and he had come to speak of the profit possibilities that stainless steel offers to the alert sheet metal contractor. Mr. Nelson gave some figures on the production of sheet steel and said that since 1940, when the sheet steel producers operated at 75 per cent of capacity and made 12 million tons of sheets, production has steadily risen until last year it reached a figure of 20 million tons, 67 per cent more than in 1940. And still no one has enough sheets! But the time seems to be nearing when the supply will overtake the demand and Mr. Nelson estimated that this will take place before the end of the year.

The use of stainless steel has increased rapidly and since 1930, when the first commercial application was made of stainless steel, Armco's production has grown



Front row: H. M. Daily, 2nd vice president; L. D. O'Donnell, 1st vice president; Wm. E. Garber, Jr., president; H. W. Meggs, immediate past president and director.  
Back row: Frank Anderson, secretary; Homer Selch, treasurer; Phil Cordes, sergeant-at-arms; E. L. Carr, director; Carl G. Butz, director.

### **1949 Officers**

Wm. E. Garber, Jr., Indianapolis.....President  
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H. W. Meggs.....New Castle

from a comparatively minute figure to 330,000 tons made last year. The speaker enumerated some of the well known features of stainless steel and also listed some applications which are good business for the sheet metal contractor. Restaurants and bars, food processors, and meat packers are large-scale users of this metal. Flue liners, smoke pipe, and roof drainage equipment can also be profitably produced from this  
(Please turn to page 178)

The candid camera at the banquet.



# ASHVE

## 9th International Exposition and 55th Annual Meeting

**N**EARLY 25,000 engineers, architects, contractors, wholesalers, dealers, and others connected with the heating, ventilating, and air conditioning field found much to interest them in the more than 300 exhibits at the 9th International Heating and Ventilating Exposition held at the International Amphitheater in Chicago from January 24 to 28. An impressive array of exhibits occupying the entire main floor of this huge building made the show the largest of its kind ever held. As in the past, this industry-wide event was held under the auspices of the American Society of Heating and Ventilating Engineers and in conjunction with its 55th annual meeting.

Trends, as far as they were reflected in the products exhibited, accented four points of progress. In order of apparent accomplishment these are: improved distribution of heat; improved combustion and control; improved design; and increased variety of special units, attachments, and appliances.

### *Industry Follows Modern Trend*

Heating and ventilating equipment manufacturers continue to pay strict attention to the appearance of their products; even elements which are regularly enclosed in cabinets, such as burner and blower units, are finished in an attractive manner. Exteriors in pressed steel panels are surfaced in baked colored enamel, often with chrome trim. Room control units are finished to harmonize with home furnishings.

The growing variety of appliances in the heating and ventilating field indicates the highly varied requirements of consumers and also the great number of variables to be considered in providing indoor climate which will meet the mysterious specifications of human comfort. There is a specific remedy and a group of appliances, to meet every complaint about "the heat," "the cold," or the "dampness," as well as a number of extra classes of appliances contributed by scientists.

A recent development introduced by some manufacturers of air conditioning equipment reveals that the air conditioning and ventilating industry is joining forces with medical science in an attempt to combat the common cold by subjecting circulating air to the ultra violet rays of sterilizing lamps and to the vapor of triethylene glycol.

According to Burgess Jennings, mechanical engineering professor at Northwestern University, considerable experiment has established the fact that triethylene glycol is quite effective for destroying bacteria when circulated through an air conditioning system.

Industrial applications of air conditioning are constantly expanding as the practical advantages of stabilized atmospheres in smoothing irregularities in production become more widely appreciated. Provision for human comfort in restaurants, theaters, hotels, office buildings, and public institutions has proved itself profitable, and is being considered as an integral part of modern construction plans.

While the field of residential construction is showing the effect of prohibitive construction costs, the heating industry is meeting this handicap by introducing a great variety of simplified, economical equipment and by designing supplementary units, which may be added as the desire for comfort dictates or future finances permit.

Manufacturers of ventilating equipment are stimulating demand for home ventilation by introducing a number of new designs in attic fans and kitchen ventilators. Fans are offered in a range of sizes from 12 to 48 inches diameter, incorporating adjustable panel window fans, exhaust fans, and attic type fans. There is also a special all-purpose 24 in. model suitable for small housing projects as an attic exhaust or window fan.

The smallest heating unit exhibited was a new gas floor furnace, designed to slip between 16 in. joists and having a register approximately 16 x 34 in. The unit is only 24 in. deep. Notwithstanding these small dimensions, it is rated at 35,000 Btu input.

Several exhibits were of special interest to the trade from the standpoint of simplifying and reducing installation costs. For example, a new system of prefabricated ductwork requires only four types of fittings and avoids the use of increasers or reducers. This system employs a relatively simple duct sizing formula and is claimed to save 30 per cent in main trunk material and 25 per cent in labor.

A comprehensive assortment of accessories was included in the display, ranging from metal and refractory combustion chambers to duct insulation and other items for building construction.



### Controls Are Stressed

Improved combustion control was evident in a number of new furnaces especially those incorporating gas and oil burners. One outstanding innovation in the field of heating controls was a new thermostat without moving parts, which utilizes the principle that electrical resistance varies with the ambient temperature and operates through two-stage electronic amplification to energize the relay controls. Another development was an electronic system control designed to regulate the heat supply to a building or zone in terms of weather change. This system incorporates an element which signals the interior heat input; a weather element on an outside wall, which signals heat demand; and a cabinet housing the controls, which actuate the furnace and control relays after suitable amplification of the signal circuits. The cabinet may also include a program clock for regulating night, morning, and daytime indoor temperatures, respectively.

The many variations in heating, ventilating, and air conditioning design and in the media under control are provided for by the complete line of one specialist in automatic electric controls, which includes the following items: control motors for positioning outdoor and return air, face and by-pass, or individual zone dampers; two position and proportioning room or duct thermostats and hygrometers; also complete accessory equipment such as relays, switches, power boxes, dampers and linkages.

### ASHVE Meeting

A record registration of over 2500 ASHVE members, ladies, and guests attended business and technical sessions and other events held in Chicago's Stevens Hotel. The sessions started Monday morning and continued through noon Thursday.

Technical sessions, luncheons, and a ladies program gave everyone an educational and entertaining schedule. There were events at which members could be informed about research carried on during the past year. There were other events at which members and

guests could relax and meet old friends and make many new ones.

A research luncheon attended jointly by members of the society and the National Heating Wholesalers Association featured a report by Cyril Tasker, director of the society's research, in which he related his observations during his recent trip to England. Mr. Tasker advocated an exchange of engineering ideas between the two countries and described warm air heating studies now in progress in 20 English residences.

The climax of the meeting was the annual banquet on Wednesday night, attended by 1100 persons in the grand ballroom of the hotel.

### New Officers

At the close of the four-day program, results of the society's letter-ballot vote were announced and the following officers were installed:

President . . . . . Alfred E. Stacey, Jr., Syracuse, N.Y.  
1st Vice President . Lester T. Avery, Cleveland, Ohio  
2nd Vice President . Lauren E. Steeley, Durham, N.H.  
Treasurer . . . . . Ernest Szekely, Milwaukee, Wis.

### Technical Sessions

During the first of the technical sessions, held on Monday, January 24, the results of a study, sponsored by the ASHVE in cooperation with the University of Illinois, College of Medicine, were presented in a paper entitled "Physiologic Adjustments of Normal Subjects and Cardiac Patients to Sudden Change in Environment." The report stated that in order to study the effects of sudden temperature change on normal persons as compared with the effects on cardiac patients, a group of 10 healthy, male medical students and 16 cardiac cases were exposed to comfortable room temperature for one hour and then entered a hot room for one hour, after which they returned to the comfortable room for another hour.

From observation of the test subjects, it was found that there is little difference in the way persons with



heart disease and those with normal hearts react to sudden changes of temperature. Their finding was "in accord with general experience of the public that no ill effects are apparent to normal individuals making the adjustment required by entering and leaving an air conditioned space during the hot summer months."

### Glass Coefficients Discussed

Another feature of the Monday technical session was a paper on "Overall Coefficients for Flat Glass, Determined Under Natural Weather Conditions," which was presented by George V. Parmelee, research associate of the society, and Warren W. Aubele, assistant research engineer. The report was based on a study made under the direction of the ASHVE Committee on Research and the Technical Advisory Committee on Heat Flow Through Glass and indicated a need for an instrument for measuring low temperature radiant energy.

The tests showed that the radiation exchange between the glass on one hand, and the ground surround-

ings and the atmosphere on the other, plays a significant part in heat loss from outdoor surfaces. "The U value concept as used in estimating building heat losses or gains does not satisfactorily take into account many common radiation exchange conditions," said the authors. "The significant effect of indoor conditions on heat transfer to a window suggest the need for field studies of heat loss through such openings under different typical surroundings."

They said the currently used U value of 1.13 for single glass is a good approximation, but the value of 0.45 for double glazed windows is "from 25 to 40 per cent too low for design wind velocities." This does not take into account the supporting members, sash, mullions and muntins, it was declared, which influence the heat flow through the glass by edge effects and disturbances of air currents, and by virtue of their area and thermal resistance, may have an important effect on the total heat flow through the window opening.

(Please turn to page 188)

## Association Activities

### California

Officers and directors of the Institute of Gas Heating Industries, Inc., for the year 1949 were inaugurated at the regular monthly meeting of the group held in Los Angeles, on Thursday evening, January 13.

The new leaders of the institute are Walter R. Dicus, French Heating Co., president; T. R. Bridges, Williams Radiator Co., vice president; Harry F. Haldeman, Harry F. Haldeman, Inc., secretary-treasurer. Directors for 1949 are A. J. Horn, Payne Furnace Co.; Arthur T. Enderle, Frank X. Enderle Co.; and Frank T. Daniel, Home Heating Service. Ernest W. Kimmell continues as managing director.

Featured at the meeting were addresses by R. W. Coleman, well-known accountant, and R. C. Terradell, sales training superintendent of the Southern California Gas Co. Mr. Coleman, who is associated with a

firm of certified public accountants, gave a progress report on field work which he had been doing to secure accounting data first-hand from heating firms. This new activity of the institute, under the guidance of the Business Administration Committee, has for its goal the compilation of a manual of cost accounting and preparation of a uniform estimate and layout sheet. The speaker expressed the hope that eventually classes would be formed in which discussions could be held on simplified, efficient bookkeeping that would result in an increase in profits for heating firms.

The second guest speaker, Mr. Terradell, covered the subject of Sales and Gas Heating Engineering. His talk was aimed at acquainting the membership with the progress which had been made in the gas heating engineering course. He also mentioned that both Utilities were interested in the forward step the institute was taking in dealer education and assured the group of continued support and cooperation.



WORO STUDIO

New officers and directors of the Institute of Gas Heating Industries, Inc., are, front row (l. to r.), Vice President T. R. Bridges; President Walter R. Dicus; Director R. O. Montrieff; Secretary-Treasurer, Harry F. Haldeman. In the back row (l. to r.) are Directors Frank T. Daniel, Arthur J. Horn, and Arthur T. Enderle

### INDOOR COMFORT CONFERENCES

St. Louis, Mo.—Mar. 21-23. C. S. Franke, 2719 Delmar Blvd., St. Louis 3.

Binghamton, N. Y.—Apr. 7-9. C. H. Starr, 168 Water St., Binghamton.

Cleveland, Ohio—Apr. 14-16. Don A. Fisher, 13444 Euclid Ave., Cleveland 12.

Columbus, Ohio—Apr. 18-20. Newton T. Hess, 63 E. Goodale St., Columbus 8.

### CANADA

Brantford, Ont.—March 21-24.\*

Montreal, P. Q. (English)—Apr. 4-7.\*

Ottawa, Ont.—Apr. 18-21. A. L. Acton, c/o Beach Foundry, Ottawa.

Maritimes—May 2-6.\*

Quebec City (French)—May 9-13. J. P. Thibault, La Fonderie de L'Islet Limitee.

\* Committee chairman not announced

# EQUIPMENT DEVELOPMENTS

## Pre-Assembled Oil Unit . . . 39

One of the many units placed on display for the first time at the 9th International Heating and Ventilating Exposition in Chicago is this new steel high boy type oil-fired winter air conditioner built specifically to meet the heating needs of small homes, individually heated apartments, and similar living quarters. It is classed as a package utility unit for closet installation and approved for less than standard clearance.

This unit is completely automatic and engineered exclusively to burn oil. Burner and all controls are mounted on the outside front of the jacket for easy access and adjustment if necessary. Two important features are a durable steel heating element and a stainless steel combustion chamber. Seams are joined by electric welding, preventing combustion gases from entering the circulating air.



The conditioner, which is factory-assembled and pre-wired, measures only 57 $\frac{3}{4}$  x 28 x 28 in. It will therefore pass through doorways of standard dimensions and can be moved in standard elevators. There are two sizes available, with a bonnet output of 85,000 and 105,000 Btuh respectively.

*American Radiator & Standard Sanitary Corp., Pittsburgh, Penn.*

Use Coupon on This Page

## Coal Fired Furnace . . . 40

A coal fired winter air conditioning unit, of cast-iron construction, has been added to a furnace manufacturer's line of gravity coal fired warm air furnaces. The unit is complete with blower, filter, and controls.

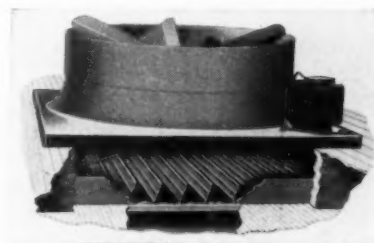


Two sizes are available at present: the 18 in. furnace, either with duplex grates or triangular four bar grates, and with a delivery at register of 58,400 Btus; and the 20 in. furnace, with four bar triangular or duplex grates, with a register delivery of 69,200 Btus.

*Union Manufacturing Co., Inc., Boyertown, Penn.*

## Attic Ventilator . . . 41

An attic ventilator has been designed and proportioned to go into the ceiling of structures where the attic space is cramped and it is difficult, if not impossible, to install a fan in a vertical position.



There are seven models of these Fresh Air Maker fans especially designed for horizontal installation. The air can be discharged either directly upward or downward.

Fan diameters range from 24 to 42 in.; motor size, from  $\frac{1}{4}$  to  $\frac{1}{2}$  hp; cfm capacity, from 4,500 to 16,000. Since the fans are made to the minimum of dimensions, they can be set far enough away from the roof structure to allow slow speed and quiet operation, which is important for a ceiling fan operating over the heads of occupants of the building.

*Schwitzer-Cummins Co., 1145 E. 22nd St., Indianapolis 7, Ind.*

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### Equipment Developments

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47	48	49	50	51	52	53	54

### New Literature

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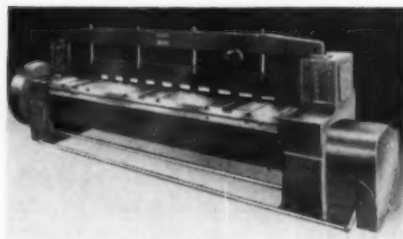
## EQUIPMENT DEVELOPMENTS

Use Coupon on Page 121

### Power Squaring Shear . . . . .42

Designers and builders of sheet metal machinery have introduced a power squaring shear with a capacity of 10 ft, 10 ga mild steel. The shear is of cast semi-steel construction; bed, endframes, knife-bar, holddown, and top-girder are all one piece castings.

To insure accurate cutting, the bed is squared with the endframes in all three directions. Ways for holddown and knife-bar are accurately machined from steel and hand scraped for perfect bearing, so that the travel is true.



The knife-bar brake is cam-operated and engages only when the knife-bar is at the top of the cycle, thus eliminating drag on the down stroke and overheating or binding. The pressure of adjustable compression springs adds to the force of holddown weight. Each hold-down foot has an individual spring-activated plunger which compensates for clamping sheets of varying thicknesses.

Standard equipment includes standard alloy blades with 4 cutting edges, 3 front gauge brackets, steel front gauge, a 7½ hp motor and all electrical equipment.

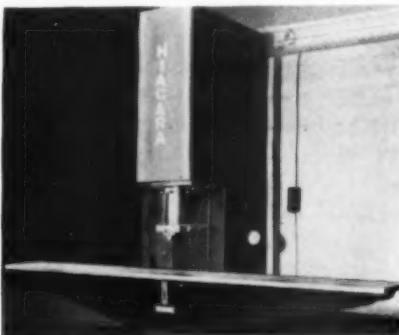
Wysong and Miles Company, Greensboro, N. C.

### Hydraulic Press . . . . .43

Straightening, forming, broaching, forging and assembling operations are all within the range of work which can be handled by a multiple purpose hydraulic press which is now available. Finger tip control of the press is achieved by the operation of a conveniently located lever by means of which the operator can govern the approach

speed, the applied pressure of the ram, and the return speed.

Because the speed of the ram approach is proportional to the initial movement of the lever, the operator may approach the job at maximum speed and slowly advance the ram onto the work. By moving the sensitive control lever he may



apply any pressure up to the capacity of the press. A maximum capacity of 135 tons can be exerted at any point in the 33 in. ram travel. The ability of the operator to control the pressure exerted is particularly important in straightening operations because this allows just the right amount of pressure to be applied to remove distortion.

The area of the press bed is 30 x 240 in., and the frame, bed and table are one piece welded, machined as a unit to precision limits.

Niagara Machine & Tool Works, Buffalo 11, N. Y.

### Job-Size Package . . . . .44

In order to avoid the waste usually entailed in breaking open large bags of material when only a small amount is needed, insulating cement has now been made available in handy 25 lb job-size bags. Packaging of this all-purpose cement in bags of this size makes it a convenient item for

the heating contractor to use on average size domestic heating installations. The 25 lb package was designed principally for use on residential jobs where application of adhesive mineral wool and asbestos fiber coating is needed to save heat losses that occur on boilers, furnaces, piping, and fittings. The in-



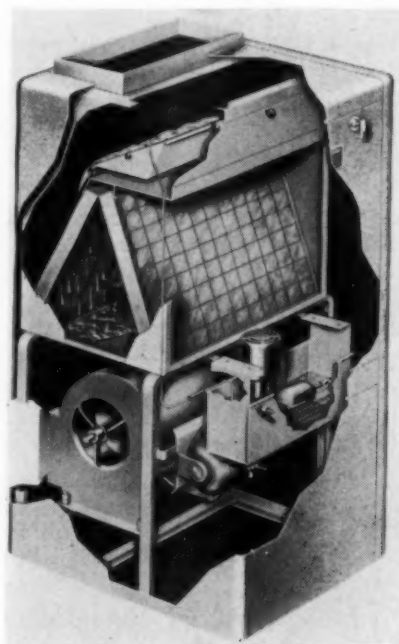
sulating cement is readily applied to all surfaces and shapes including corners and irregular shaped pieces of heating equipment.

Eagle-Picher Co., Cincinnati 1, Ohio.

### Air Treating Unit . . . . .45

A self-contained, air treating unit that cleans, freshens, humidifies, and controls the relative humidity of air passing through it, is being marketed for use in the home. Known as the TEG conditioner, the unit purifies air by vaporizing triethylene glycol into its airstream. These vapors are said to produce a killing action on certain forms of airborne bacteria.

Air drawn through the conditioner by means of a motor driven blower passes over a permanent, glass fiber filter cell, which is saturated and flushed continuously by



the liquid Tegylene. By passing through the filter cell, the air is cleansed of dirt particles by contact with the liquid and wetted glass fibers.

As the air passes over the filter cell, it is humidified by the water in the Tegylene, and at the same time, the vapor from the triethylene glycol which is absorbed into the air purifies it of certain types of airborne bacteria.

The conditioner humidifies the air and controls the relative humidity of the home. From the filter cell, air passes through a fiber glass



eliminator mat which removes any remaining particles of Tegelene. The air is then circulated through the blower and into a duct system or directly into the home.

The conditioner may be used as a cooling device in summer by draining off the Tegelene and replacing it with water.

The unit measures 56¼ x 26 x 35 in. The blower motor is ¼ hp and the pump motor is 1/30 hp. The water connection is adapted for a ¾ in. flared copper tube fitting.

National Air Conditioning, Inc., Johnstown, Penn.

### Electric Soldering Iron . . . . .46

An electric soldering iron, said to be about 40 per cent more powerful than other models available, is designed for extra heavy soldering. It is powered at 700 watts, with a replaceable 1¾ in. diameter screw type tip. Operating on any cycle, a-c or d-c current, it is furnished for either 110 or 220 volts.

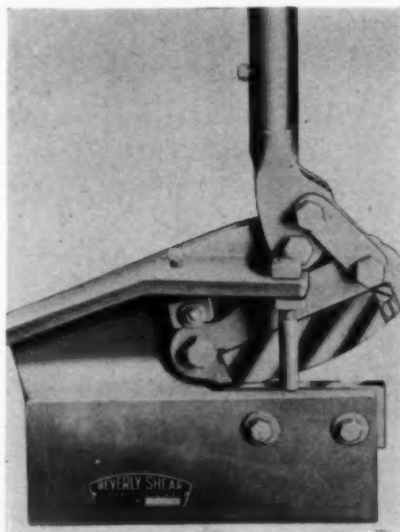
The heating element is enclosed in a damage proof, hexagon shaped housing, which protects it from mechanical injury. The high heat alloy element core resists scale and prolongs the life of the element. Cooling fins deflect heat away from the handle.

Hexacon Electric Co., 275 W. Clay Ave., Roselle Park, N. J.

### Portable Slitting Shear . . . . .47

A portable slitting shear with slitting capacity of ½ in. in mild steel and 10 ga in stainless has just been introduced. An adjustable shoe, which provides additional support at the toe of the upper blade holder, is said to give increased strength and cutting efficiency. A heavy frame provides the rigidity and strength necessary to assure sharp, clean cutting and to prevent side play or movement of the blades when making cuts in heavy gauge steel. Easy operation is assured by the powerful toggle

action of the upper blade holder. Shear blades are interchangeable



and adjustable. The blades furnished with the shear are of tempered and drawn tool steel or of high carbon high chrome for working in stainless.

Beverly Shear Mfg. Co., 3009 W. 110th Pl., Chicago, Ill.

### Small Evaporative Cooler . . . . .48

A small evaporative cooler, for use wherever it is necessary to cool a small or remote room, has been placed on the market. The unit weighs only 17 lbs, measures only 12 x 16 x 9½ in., and can be easily



installed in almost any type window opening.

The cooler disperses 800 cfm of filtered, washed, and cooled air. A heavy duty motor drives a deep pitched four blade fan which expels the cooled air through a 10 in. grille covered opening.

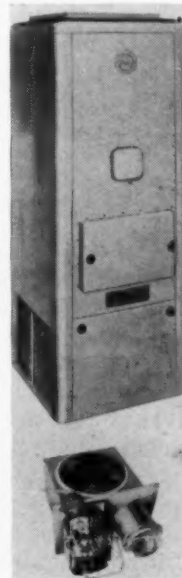
The cabinet is attractively finished to blend with furnishings in the home.

Palmer Mfg. Corp., Phoenix, Ariz.

### Compact Oil Furnace . . . . .49

Designed as a compact but highly efficient unit for use in small homes, a recently announced oil fired winter air conditioner requires only 25 x 26 in. floor space.

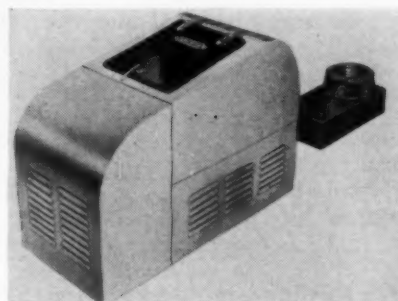
Its size makes it suitable for easy installation in a small area such as an alcove, hall, closet, utility room, service porch, kitchen or basement. Because of a scientific baffling which keeps the casing cool, the unit can be installed on wood floors with less than standard clearance. All moving parts are enclosed to prevent unauthorized adjustments.



The firing unit employed is a stainless steel burner of the vaporizing type. A special air inlet design and combination ring construction produce a quiet, high temperature and clean burning flame. The pilot is so designed that it keeps the system from cooling off when there is no heat demand. Conco Engineering Works, Mendota, Ill.

### Hopper Model Stoker . . . . .50

An improved hopper model stoker, recently announced, offers as its outstanding feature of improved operation a hopper of one piece welded construction with extra heavy trough, fine grain finish,



chrome hardware, and a new type of leveling studs rubber mounted. Other features are a double end shaft motor, Sirocco type dynamically balanced fan securely mounted to the motor shaft, continuous

## EQUIPMENT DEVELOPMENTS

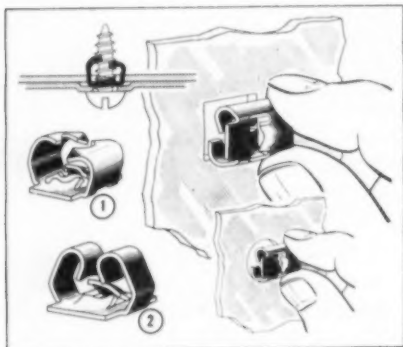
Use Coupon on Page 121

speed transmission with improved method of changing coal feed delivery.

*Anchor Div., Stratton & Terstegge Co., Inc., Box 311, New Albany, Ind.*

### Expansion Nuts .....51

Blind assembly of parts to metal panels can be accomplished quickly with an improved type of expansion nut according to the manufacturer's recent announcement. These nuts or fasteners permit the complete assembly to be made from one side and eliminate the necessity of two operators working on opposite sides of large panels. The locking principle embodied in the base of the fastener provides a secure vibration proof fastening.



These expansion nuts are self-retaining and expand when a tapping screw is inserted. They are produced in two different basic designs, Fig. 1, having spring arms that are formed to grip at the root of the screw thread, and Fig. 2, having spring arms turned under to ride on the screw threads.

The use of these fasteners eliminates staking, welding, clinching, and riveting operations.

*Tinnerman Products, Inc., 2035 Fulton Rd., Cleveland 13, Ohio.*

### Factory Assembled Furnace .52

Additional models in gas and oil fired forced warm air furnaces now available will expand a manufacturer's line to give their outlets a complete range of sizes up to 175,000 Btu. These furnaces are com-

pletely die stamped, including the modern casing, and all are assembled at the factory and shipped as package units.

Sub-assemblies are designed so that, if a narrow basement entrance



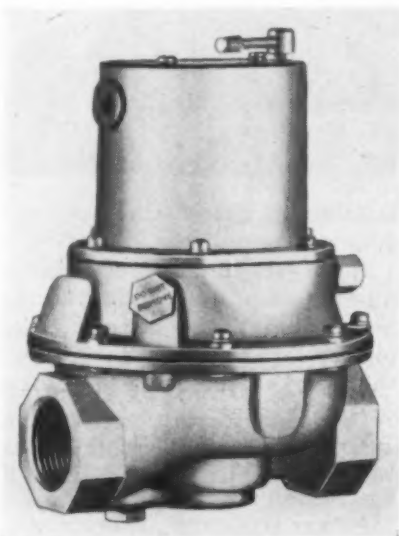
makes it necessary, the casing sides can be quickly removed, leaving the bottom pan, blower, burner, heat exchanger, and divider plates in a narrow assembly that can be easily handled.

Heat exchangers are of 12 ga steel throughout and are designed to provide maximum efficiency without use of internal baffles.

*Morrison Steel Products, Inc., Buffalo, N. Y.*

### Silent Gas Valve .....53

An electric diaphragm valve has been designed for reliable control of natural, manufactured, mixed, and LP gases to space and unit heaters, central, floor and wall fur-



naces, and boilers. The valve is silent and has no packing glands or bellows to impede operation. It is constructed of die formed aluminum of high density and tensile strength. Two small sizes, two medium sizes, and three large sizes are available.

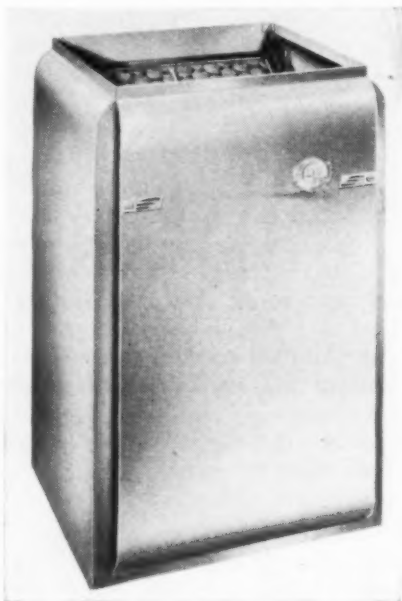
Also available are packaged sets which include, besides the valve, a new snap-action thermostat, a transformer, and thermostat cable.

*General Controls Co., 801 Allen Ave., Glendale 1, Calif.*

### Blower-Filter Unit .....54

A blower-filter unit designed to circulate dust free air and to maintain evenly balanced temperatures throughout the home is now available in a streamlined model.

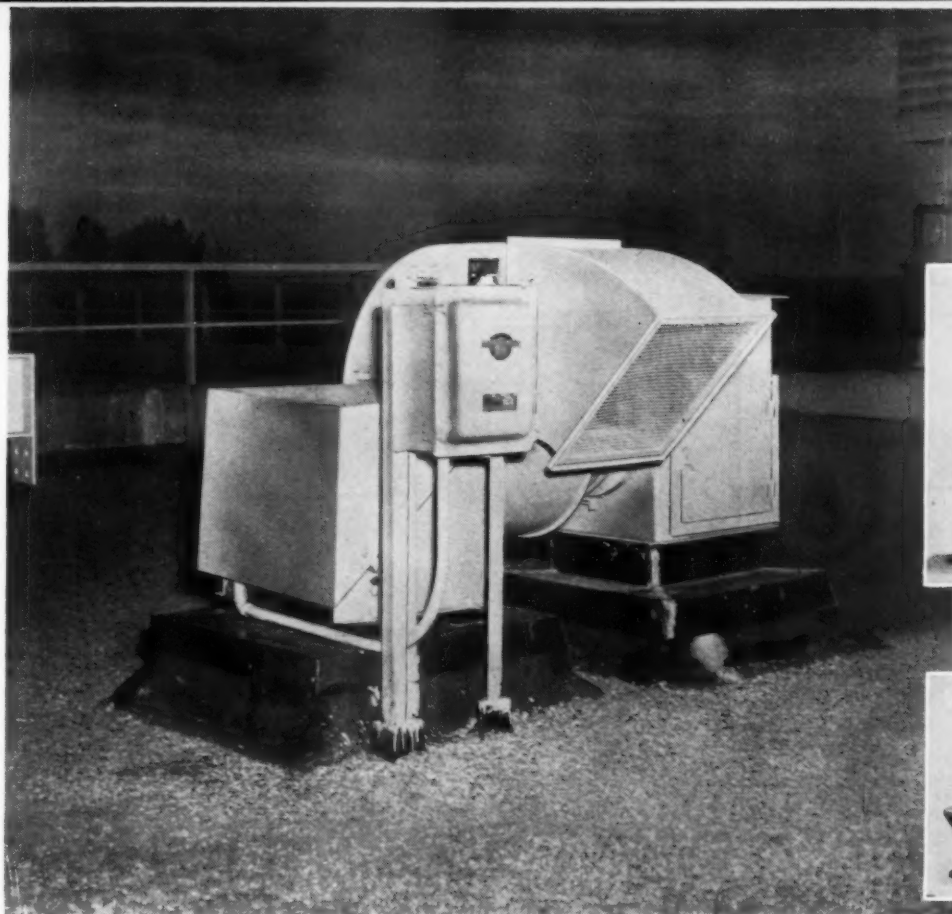
The center suspension blower wheel on this model has been improved to provide maximum air delivery. Other features of the unit are greater motor range adjustability and an easily accessible variable motor speed pulley. Two air



filters of the throwaway type, each 1 in. thick, are used in the unit. Bearings and motor are rubber cushioned to allow quiet operation and eliminate vibration.

This package unit is ruggedly constructed of heavy gauge steel. Large access door permits easy servicing of motor, belt, or filters. For summer operation, this door may be left off and a cold air return can easily be fitted to the top of the unit.

*Lau Blower Co., Dayton 7, Ohio.*



"Buffalo" Belted Vent Sets Are Ideal for Outdoor Installation.

## For Economical, FLEXIBLE VENTILATING SERVICE specify "Buffalo" VENT SETS

Adaptable to many industrial and commercial uses and easily adjusted to changing needs, "Buffalo" Vent Sets provide a flexibility and economy in operation that are sure to bring satisfaction in every installation.

"Buffalo" Vent Sets are quickly and easily set up, even in tight places. Each unit gives quiet, trouble-free performance over a wide range of speeds and capacities. Changes in a ventilating system will not overload the fan motor. Duct work can be altered and Vent Set capacity changed for new resistance. Variable pitch diameter motor sheaves on motors up to 2 HP are readily adjusted. Stationary inlet vanes direct air to rotor with minimum shock loss.

For top performance on a variety of ventilating jobs—temporary or permanent, indoors or out—install "Buffalo" Vent Sets.

Write for full information,  
in Bulletin 3499

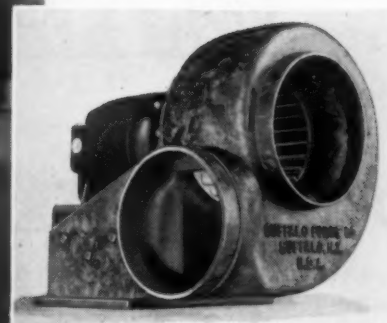
*"Buffalo"*  
FIRST  
FOR FANS

# BUFFALO FORGE COMPANY

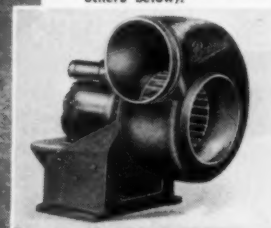
504 Broadway

BUFFALO, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont. Branch offices in all Principal Cities



**BABY VENT SET**  
Sturdy "Buffalo" Baby Vent Sets are ideal for exhausting from hoods, vats and similar equipment, or for ventilating small rooms and booths. Adjustable to various discharge positions (bottom-horizontal shown above; four others below).



Top Horizontal



Up Blast



Angular Up Blast



Down Blast

VENTILATING  
FORCED DRAFT

AIR WASHING  
COOLING

AIR TEMPERING  
HEATING

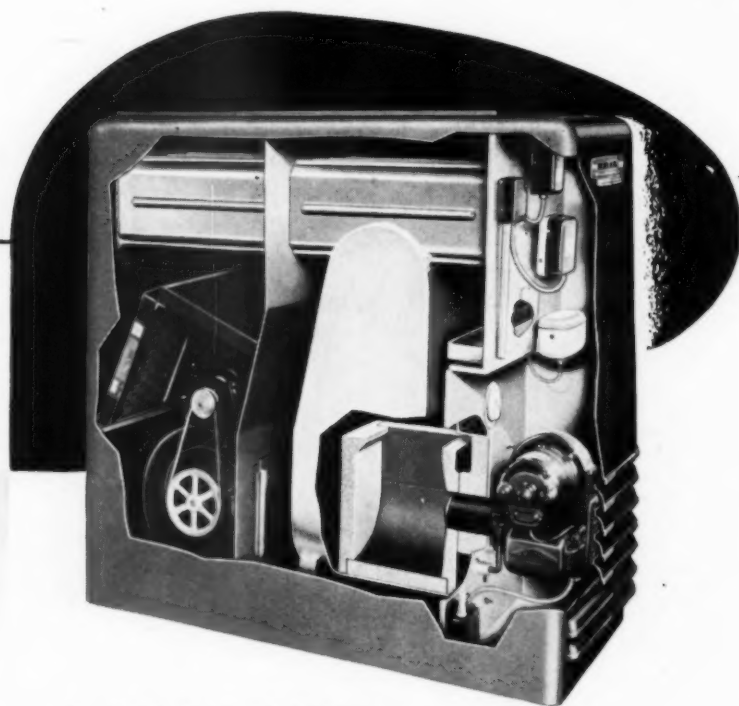
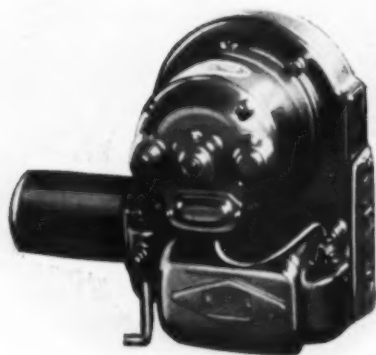
INDUCED DRAFT  
PRESSURE BLOWING

EXHAUSTING



unit by HEIL

burner by HEIL



for higher efficiency  
easier servicing  
greater satisfaction

## HEIL units are **"ALL HEIL BUILT"**

**Designed • Fabricated • Sold • Backed—by ONE Reliable Name**

There are lots of furnaces and boilers, and there are lots of oil burners. But you can't put just any furnace and burner together and expect the best results. For highest efficiency, for most satisfactory operation, it's obvious that furnace and burner should be made for each other.

In the entire industry, Heil is one of the very few manufacturers building both burner and unit. That means that the Heil Pressure-Atomizing Burner matches the Heil Furnace or the Heil Boiler, that the unit is designed and built as a *whole*, not as a combination of two separate pieces.

### Undivided Responsibility and YOU

Because Heil builds entire units, *you* make more profits. Better design and higher efficiency mean easier sales. Unified construction means less trouble, easier servicing. One source for the entire unit gives you undivided responsibility to simplify your business relationships. Yes, Heil builds the whole unit so that you can build a better business.

Write today and find out more about the Heil Automatic Heating line. You'll see that it's packed with selling points, to help you to more money. You'll find, too, that Heil is known for friendly, honest dealings. It's the franchise you ought to have. Write Heil, Dept. 8139, now!

*Plan to see us in Spaces 464-470 at the Oil Heat Exposition, May 16-20.*

# THE HEIL CO.

GENERAL OFFICES: 3081 W. MONTANA STREET, MILWAUKEE 1, WISCONSIN

Factories: Milwaukee, Wis.—Hillside, N. J.

District Offices: Hillside, Washington, D. C., Atlanta, Milwaukee, Detroit, Chicago, Minneapolis, Kansas City, Dallas, Los Angeles, Seattle.



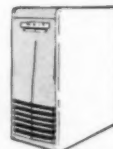
OIL-FIRED  
WINTER AIR CONDITIONERS



OIL-FIRED  
BOILERS



CONVERSION  
OIL BURNERS



GAS-FIRED  
WINTER AIR CONDITIONERS

*Manufacturers of Quality Automatic Heating Equipment Since 1924*

# BRUNDAGE AIR-RENEWER OPENS ENTIRE NEW FIELD OF SALES DURING THE COMING MONTHS

*There is an ever growing demand among the discriminating home owners of today . . . for clean, correctly humidified, indoor warm air without its usual irritating, injurious dryness . . . air free of harmful bacteria!*

To enable home owners, present and future, to enjoy their indoor living during the heating season, in an atmosphere of greater comfort with the utmost in protection to their health and property . . . the Brundage Company, Kalamazoo, Michigan, presents their newest product, the Brundage AIR-RENEWER.

The Brundage AIR-RENEWER cleans the air, purifies, humidifies and circulates it throughout the house in an imperceptible movement. The Brundage AIR-RENEWER is the only product of its kind on the market offering as a central station an all-utility unit . . . compact . . . automatic . . . self-adjusting, trouble free. It is presently available in three models for operation with all types of heating systems, such as gravity, forced-air or radiator heated homes.

Families are definitely aware of the dry, irritating condition of the warm indoor air during the winter months. Air filled with dirt, dust, lint and other impurities is responsible for carrying bacteria and unseen irritants causing many common ailments.

Medical authorities have proven that humidity is the guardian of health. Properly controlled water vapor content prevents excessive dryness of indoor air which directly affects the mucous membranes of the nose and throat, thus weakening our natural resistance to respiratory diseases.

The Brundage AIR-RENEWER's design is based on a thorough comprehension and the correct interpretation of known chemical and electronic applications for the practical and proper treatment of warm indoor air. The use of triethylene glycol for the control of humidity, for its sterilizing action and its power to dissolve dirt and clean the air, is well established.

Incorporated in the Brundage AIR-RENEWER is powerful ultra-violet light . . . bathing the airstream with sunshine . . . that spells death to air-borne bacteria. This is the first time germicidal lamps have been designed into a unit to obtain their highest rated efficiency.

The AIR-RENEWER's design highlights simple and trouble-free operation. The extraordinary chemical liquid,

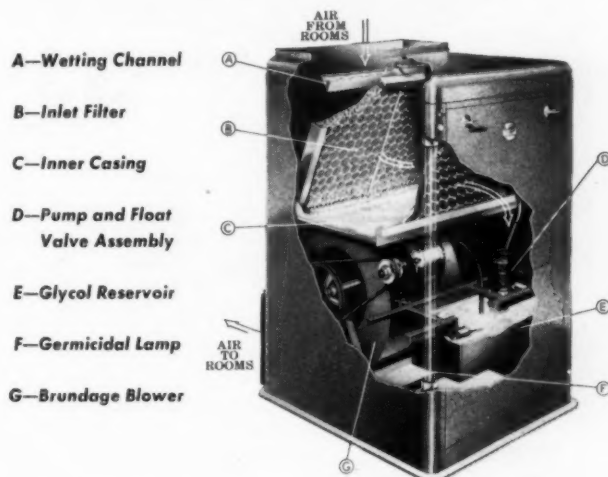


Brundage AIR-RENEWER,  
Model 713A

Brundage Glycol Solution, not only takes the place of the humidistat but means lime-free operation. The owner, by simple adjustment of a setscrew, can regulate the humidity from 20 to 50 per cent. Once set, the desired humidity is automatically maintained.

**HOW IT OPERATES** — Air from the house entering the inlet filter of the AIR-RENEWER, passes through the glycol-water saturated filter. Here the proper amount of water is added to the air and all impurities (dust, dirt, lint, and other foreign particles) are lost to the dirt-disintegrating glycol. The air now passes through the second filter element, an eliminator mat, which removes any entrained

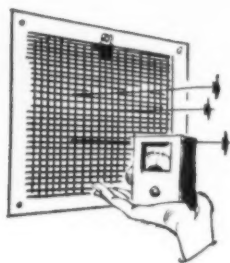
liquid droplets. The air is now bathed by powerful germicidal lamps before passing through the quiet Brundage blower. The air (after being heated) is returned to the rooms . . . cleaned of impurities, properly humidified and free of harmful bacteria . . . completely renewed.



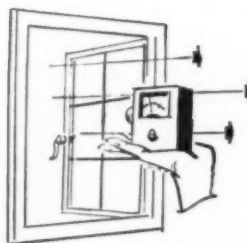
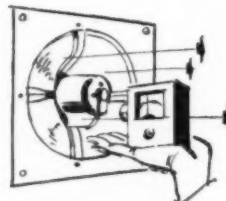
Cutaway View — Brundage AIR-RENEWER, Model 713A

For complete information, literature and prices, together with the Brundage merchandising plan that opens an entire new field of sales during the months ahead . . . write to: **BRUNDAGE COMPANY**, 607 North Park Street, Kalamazoo, Michigan.

*Fastest*



*Surest way to check  
Air velocities*



## Velometer Jr.

### FOR BALANCING AIR SUPPLY IN NEW OR EXISTING SYSTEMS

Here's the way to take the guesswork out of the job of balancing systems and to speed up the adjustment of any air conditioning, heating, and/or ventilating set-up. It's the Alnor Velometer Jr., the miniature, direct-reading air-velocity meter—a handy low-cost instrument for instantaneous and precise measurement of air velocities in unrestricted areas. Only 4 inches high, 3 inches wide, 1½ inches deep, Velometer Jr. is precisely built for accurate performance—with double pivoted, double jeweled movement, air-actuated pointer vane, and sturdy, handsome, molded bakelite case. Available with single or double velocity range scales, Velometer Jr. can be one of your most useful tools for years to come.

Only \$**33.00**

Handsome Genuine Leather Case  
Available for Only \$6.00

F. O. B. Factory

#### NOW IS THE TIME...

Order your Velometer Jr. today while you are thinking about it. And send for Bulletin which gives complete details. Use the handy coupon!



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PRECISION INSTRUMENTS  
FOR EVERY INDUSTRY





More of tomorrow's jobs will go to roofers who are familiar with...

## Easy-Working **SOFT TEMPER MONEL**

**Monel Roofing Specialists will cash in on big national advertising and promotion program; will install many jobs this year.**

You can expect a lot of your customers to ask questions about Monel\* during 1949.

How do we know? Because more than 250,000 building owners, management and maintenance men, architects and general contractors are learning about the "life-of-the-building" dependability of Monel Roofing Sheet.

Magazine and newspaper articles, trade paper ads, booklets and direct mail letters are also telling building industry men the facts about Monel's low cost. These men—your own customers—are finding that Monel Roofing Sheet's superior corrosion resistance, strength and toughness make it possible to use thinner gauge sheet for many standard roofing parts. This means that your bids on Monel roofs and roofing parts will be comparable to those on other quality materials—and sometimes they will even be lower!

These startling facts have started thousands of building industry men asking questions—questions like: "Who can install a Monel roof? Who will fabricate Monel gutters, flashings, downspouts, or louvers for me?"

It will pay you to have the answers ready. And it won't take you more than 15 minutes to get these answers out of our new, illustrated booklet, **"ONE METAL ROOF...for the Life of Your Building."**

All the information you need is right there in **ONE METAL ROOF**, along with sketches, diagrams and photographs. Even a sample of soft temper Monel Roofing Sheet for you to experiment with! We want you to prove to your own satisfaction that Monel is easy to cut, bend, form, and solder, even to irregular contours like gutters, cornices and skylight frames.

Naturally, we haven't room to tell you here about all the helps you'll find in this booklet. The best way to get the full story—all the answers to the questions you're likely to be asked—is to **send for the booklet that has all the answers.** Use the handy coupon, and we'll get your free copy of **"ONE METAL ROOF...for the Life of Your Building"** and other helpful material into the mail right away.

**THE INTERNATIONAL NICKEL COMPANY, INC.**  
67 Wall Street, New York 5, N. Y. \*Reg. U.S. Pat. Off.



**MONEL\***...for the life of the building

AMERICAN ARTISAN, March, 1949



**SHEET METAL MEN** laying standing seam Monel roofing on recreation building at Carl Schurz Park, New York.



This sample of Monel roofing is still completely free of pitting and fatigue cracks after almost 30 years of service on the Pennsylvania Railroad Station, New York City. Sample was removed for test purposes. Center section has been cleaned of soot and other industrial dirt.

**The International Nickel Company, Inc.**  
67 Wall Street, New York 5, N. Y.

I want to land my share of Monel roofing jobs. Without obligation on my part, please send me a free copy of **"ONE METAL ROOF...for the Life of Your Building"** and full details about how I can cash in on 1949's big Monel roofing market.

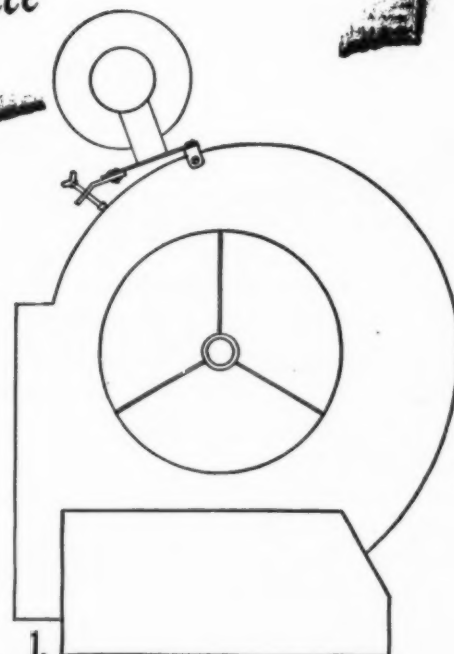
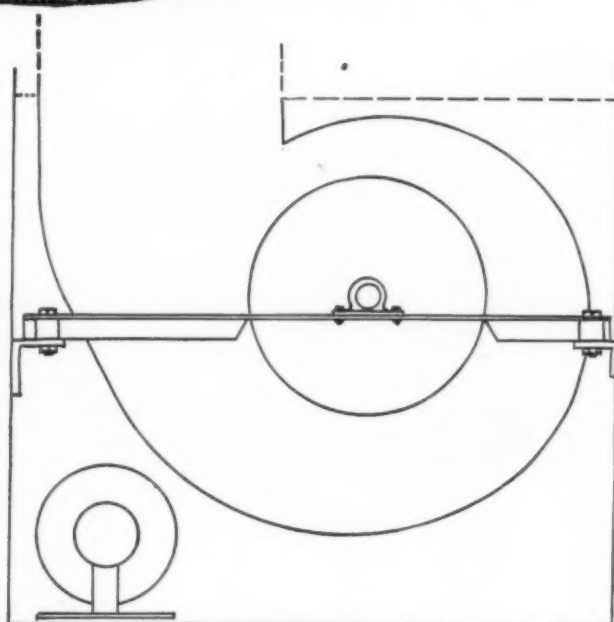
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AA 3-49

**ADVANTAGES IN ENGINEERING BLOWER UNIT  
AS INTEGRAL PART OF YOUR OWN PRODUCT...**  
*rather than building your furnace  
around a stock blower*



1. Stock blower to fit requirements would have to have a separate transformation piece.
  2. Legs on stock blower and motor mount are of no value in special application.
  3. Stock Bearings are of no value.
- 2.
1. Transformation piece can be built into blower.
  2. Special Bearing support built into unit as needed.
  3. No legs necessary.

**Why not build your own Complete Blower Unit** with housing, bearing supports and motor supports in special applications rather than trying to make a stock blower fit? With Morrison, you engineer the blower to your product, rather than engineer your product around a stock blower. You have a blower that is characteristic of your product—one that is an integral part of your unit rather than an added accessory.



*Write for latest Morrison Brochure*

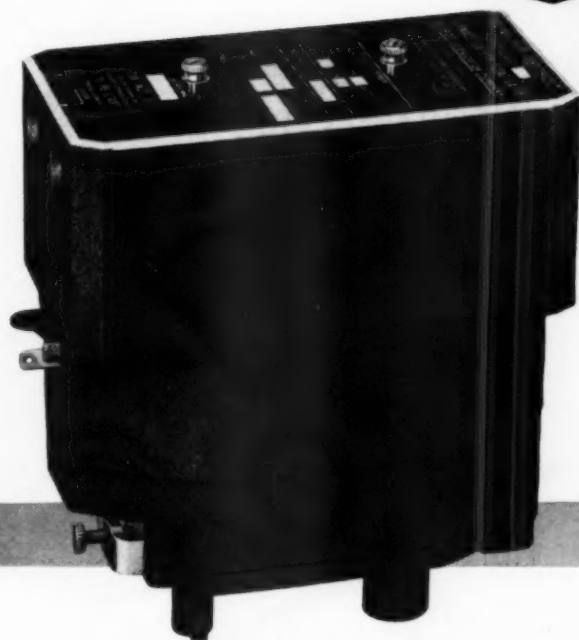
**MORRISON PRODUCTS INC.**

16816 Waterloo Road

CLEVELAND 10, OHIO

# "DETROIT" *Controls* for Vaporizing Oil Furnaces

## Automatic—Thermostat Controlled



*Simple*  
*Reliable*  
*Durable*

CRC-239 FF  
With 2-Speed Draft Fan Control

CRC-239 FH  
With Draft Fan Control, High  
Fire Only

CRC-239 FN  
Without Draft Fan Control

The "Detroit" line of controls for vaporizing type oil furnaces is complete, thoroughly tested by years of service—simple, reliable and durable.

Typical of the operation of these valves is the CRC-239 FF. When the room thermostat calls for heat, the valve opens to a hesitation point, at which a predetermined amount of fuel is fed to the burner for approximately one minute. At the end of this hesitation period the metering stem snaps to the full "on" position and the motor speed is increased simultaneously to provide full draft for high fire operation. When the room thermostat is satisfied, the heat motor returns the metering stem to the hesitation point within a few seconds. The fan continues to run at high speed for approximately two minutes to clear up the fire. At the end of this purge period the oil

flow is cut down to pilot and fan speed is reduced to provide proper draft for the pilot.

CRC-239 FH operates in the same way, except that the induced draft fan is cut off at low fire, for which natural draft is used.

CRC-239 FN is for use with burners not having induced draft, or for those burners having continuous forced draft at both high and low fire.

All models have independent adjustments for high and low fire. All are based upon the sturdy, reliable CRC-239 Float Valve mechanism. They're easy to clean, and rarely need any other servicing.

Use the "Detroit" No. 411 Thermostat with "Detroit" Furnace Valves, for the most satisfactory operation.

2702

## DETROIT LUBRICATOR COMPANY

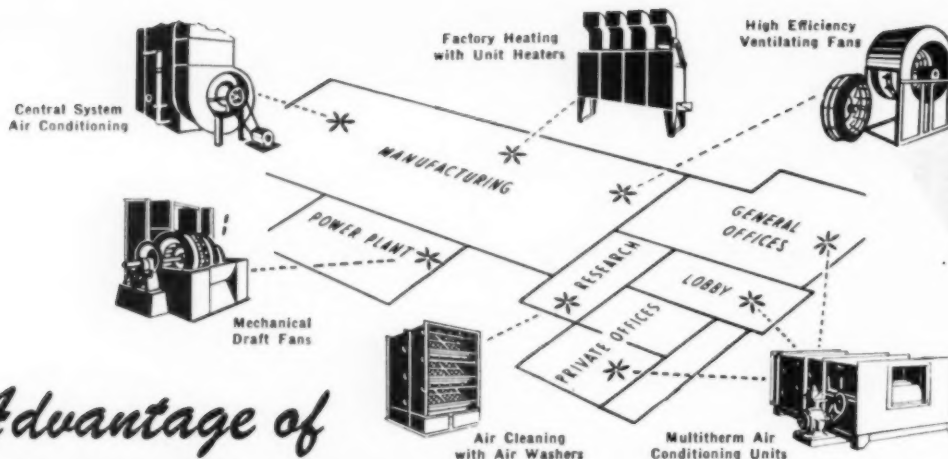
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"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators





*Take Advantage of*

# CLARAGE

## *Localized* EXPERIENCE

When you get to know the Clarage application engineer in your vicinity, you will find this chap has a lot of **sensible, practical ideas** on air handling and air conditioning.

It doesn't make any difference what kind of a problem you are up against — if it's in our field — the chances are he can help you . . . show you how to get **results economically**.

. . . And should you accept his recommendations, you will be installing **A-1 equipment**. For Clarage has a long-time reputation, both for low cost operation, and faithful performance.

Our **localized experience**, in most centers, is as close as your telephone. It will pay you to try us!

THERE'S A  
CLARAGE UNIT  
FOR EVERY  
NEED IN  
EVERY TYPE  
OF BUILDING



### *Ventilating Fans* of Efficient Design and Trouble-Free Construction

Clarage fans for industrial plant and public building installations are built in two types. Type W fans operate at **high speeds** and are suitable to direct motor or V-belt drive. Type HV fans are **low speed** for particularly quiet operation. Both are available in sizes 200 to 200,000 c.f.m. Both can be equipped with either dust-proof babbitted bearings or ball bearings, and in the smaller sizes are **easily adjustable** on the job for any of eight different directions of air discharge. Highly efficient designs and expert workmanship assure economical operation and low maintenance. Also widely used in cooling and complete year-'round air conditioning systems.



## CLARAGE FAN COMPANY

KALAMAZOO, MICHIGAN . . . SALES APPLICATION OFFICES IN ALL PRINCIPAL CITIES



# Weirzin

ELECTROLYTIC ZINC-COATED SHEETS AND STRIP



## KITCHEN-WISE MANUFACTURERS ARE WEIRZIN-WISE, TOO for very good reasons!

Products that are fabricated from Weirzin have a "head start" on the road to success because of their basic sales advantages. Bonderized Weirzin's affinity for paint, enamel and lacquer assures an excellent appearance, with less danger of the finish checking, chipping or being damaged by constant cleaning. And Weirzin-built products are protected against unsightly and damaging corrosion of exposed metal parts. The kitchen-wise manufacturer is wise to the fabricating advantages of Weirzin, too. It will not rust or corrode in stock . . . it requires no pickling or buffing before fabrication, nor prime coating before finishing. Products that require extensive deep-drawing, forming and punching are "naturals" for Weirzin electrolytic zinc-coated sheet or strip.

# WEIRTON STEEL CO.

WEIRTON, W. VA., Sales Offices in Principal Cities  
Division of NATIONAL STEEL CORPORATION, Executive Offices, Pittsburgh, Pennsylvania



# NIAGARA

*Presents America's Newest and Finest*

## 16 GAGE FOOT SHEAR

### *Featuring*

Capacity greater  
than ever before

Welded steel  
strength and  
rigidity

Formed steel  
throughout

Automatic  
holddown

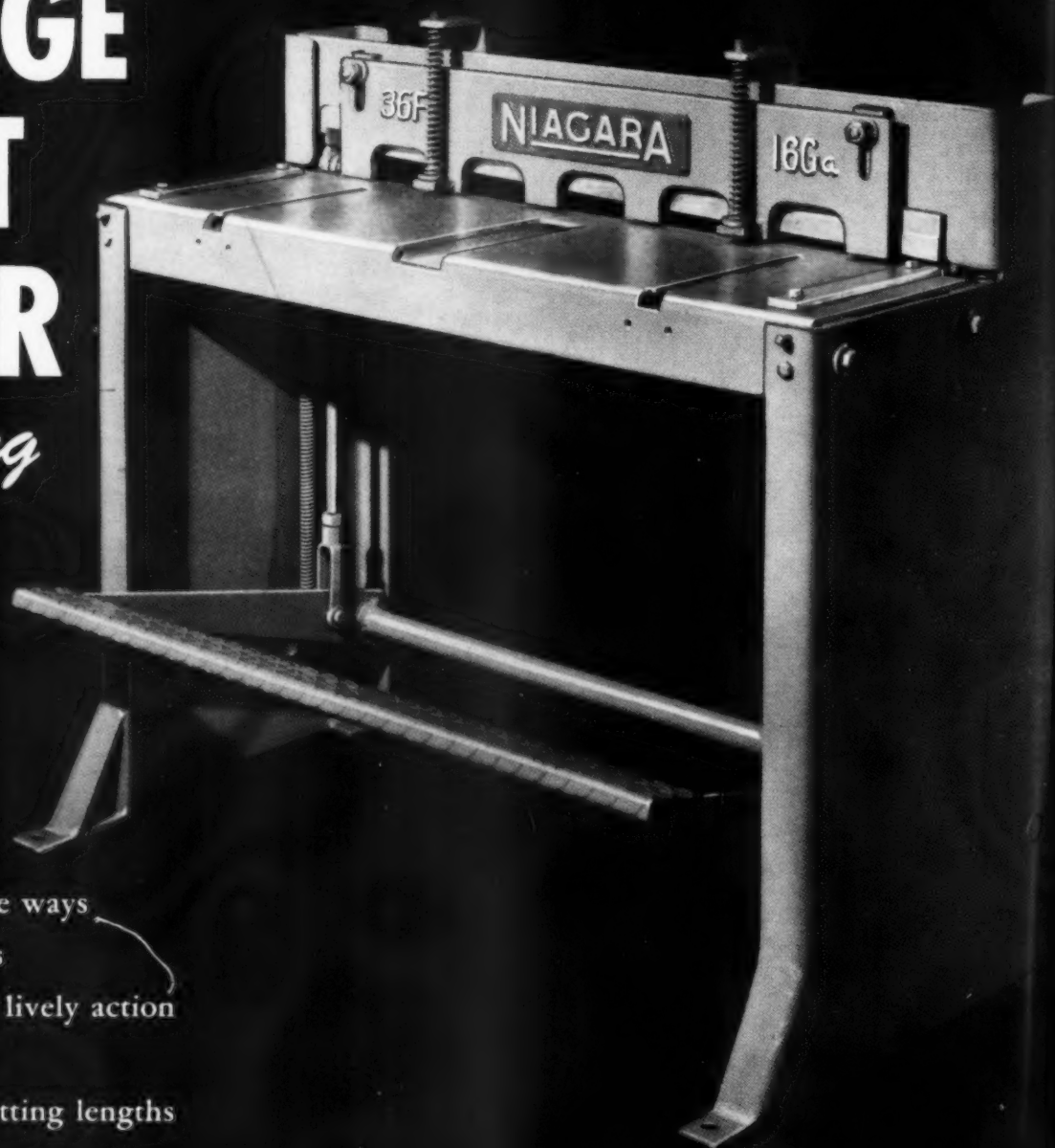
Heavy duty bronze ways

Clean straight cuts

Easy operation — lively action

Portable

30, 36 and 42" cutting lengths



**NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.**  
**DISTRICT OFFICES: NEW YORK, CLEVELAND, DETROIT**



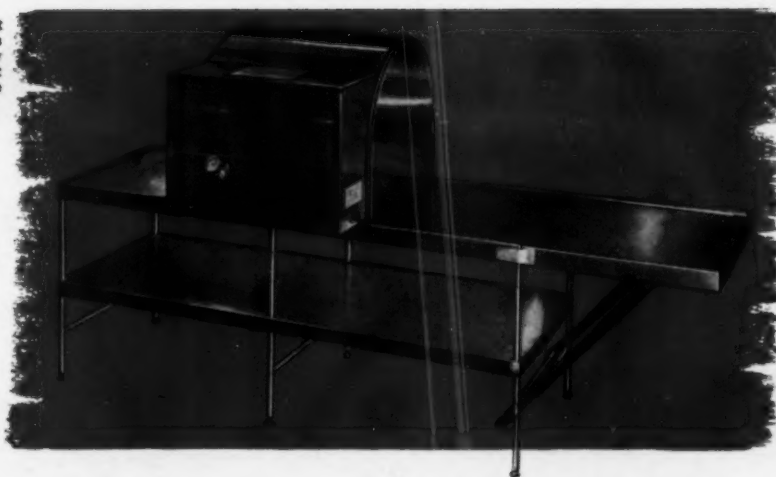


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N. Y.  
ROIT

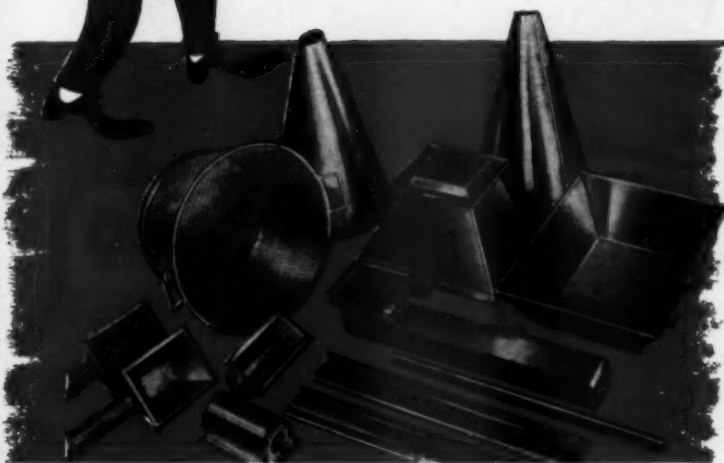


This hospital therapy unit made of U-S-S Stainless is representative of the many highly profitable jobs that you can take on if you are working with Stainless.



## The popular appeal of Stainless Steel

means more and better jobs for you



Stainless Steel equipment parts like these are used in enormous quantities in the processing and allied industries. Simple in form they can be turned out by any competent sheet metal shop. And there's money in them.

You can't deny the fact that Stainless Steel is riding high as the people's choice today.

Ask a housewife what she'd like most in a kitchen sink and she'll answer "Stainless." Talk to a storekeeper and suggest Stainless Steel for fixtures or decorative trim and watch his eyes light up. Tell a home-owner that gutters and down-spouts can be had in permanent Stainless Steel and he'll say, "I wish I had them on my house."

It's because *everybody* likes Stainless that you're missing a golden opportunity if you are not going after this profitable, reputation-building business.

### Fabrication is not difficult — and U-S-S Stainless is available

If you haven't worked with Stainless Steel before, you're in for a pleasant surprise. You will find that handling U-S-S Stainless through your shop presents no unusual problems. It can be readily fabricated on the same equipment you now use for other sheet metals.

And, if you have been having trouble getting other materials, this will cheer you up. We can supply your requirements completely in No. 2B and No. 4 finish Sheets. Ready, too, for immediate delivery and in

adequate supply are: Bars to meet high standards of machinability; Plates in sizes up to 120 inches wide and 360 inches long; Seamless Tubing; Pipe; Angles; Channels; as well as Welding Electrodes—in all standard grades and specifications.

For prompt service, contact your regular supplier, or phone, wire, or write to one of the warehouses of United States Steel Supply Company. You'll find one in your city or not far away.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO • CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO  
COLUMBIA STEEL COMPANY, SAN FRANCISCO • TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM  
NATIONAL TUBE COMPANY, PITTSBURGH • UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST TO COAST  
UNITED STATES STEEL EXPORT COMPANY, NEW YORK



# U-S-S STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS

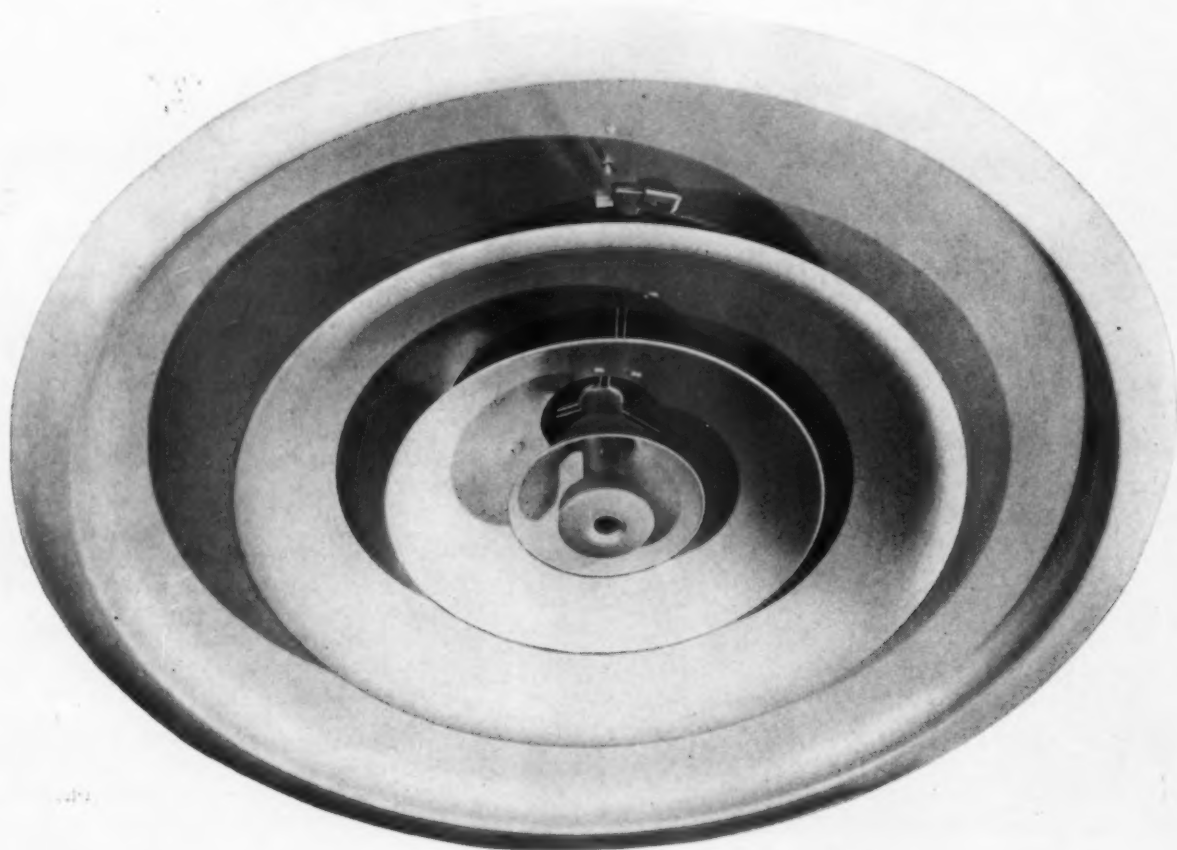
UNITED STATES STEEL



**THERE IS NO  
SUBSTITUTE FOR...**

# ANEMOSTAT

## DRAFTLESS AIR DISTRIBUTION



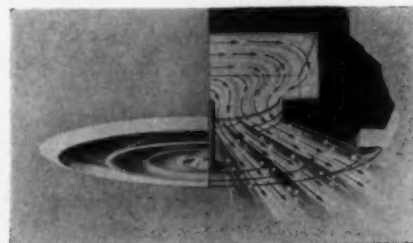
Even though you've installed the finest temperature controls, compressor, blower, ducts and other air conditioning equipment, your entire system will be a "dud" if the air diffusion is faulty. Don't take a chance with "substitutes"... insist on Anemostat Draftless Air Diffusers.

For *only* Anemostat Air Diffusers distribute air at any required velocity in predetermined patterns. *Only* Anemostats instantly equalize temperature and humidity—*completely eliminate drafts.*

That's because Anemostats provide an *exclusive* aspiration effect which siphons room air into the device where it is mixed, within the unit, with supply air before it is discharged in a multiplicity of planes.

Remember... there is *no substitute* for Anemostat Draftless Air Distribution. For immediate customer satisfaction and for long-range economy, install Anemostats in both new and existing heating, ventilating and air conditioning systems.

There is a type of Anemostat, pleasing in appearance, for the solution of every air distribution problem. Illustrated is the new Type C-1 ceiling Anemostat which is adjustable to meet changing conditions of occupancy or seasonal weather variations.



The sectional view shows how the Anemostat provides draftless comfort by means of the exclusive aspiration principle.

# ANEMOSTAT

REG. U. S. PAT. OFF.

## DRAFTLESS *Aspirating* AIR DIFFUSERS

ANEMOSTAT CORPORATION OF AMERICA

10 EAST 39th STREET, NEW YORK 16, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

*"No air conditioning system is better than its air distribution"*

### WRITE FOR LITERATURE

describing how Anemostats provide draftless comfort.

### ASK FOR ENGINEERING AID

Anemostat field engineers will gladly assist you, your architect or engineer in finding solutions to your air distribution problems.

Why the WINKLER

# Constant Fuel-Air Ratio

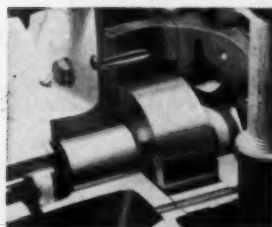
means PROFITS for YOU!



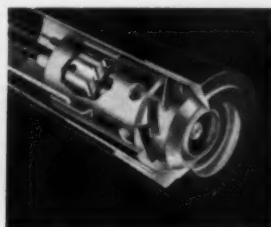
The New  
WINKLER

LP  
LOW PRESSURE  
OIL BURNER

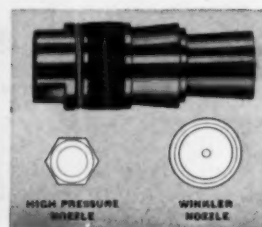
**1** This is the exclusive Winkler FUEL METER which assures a constant fuel-air ratio, regardless of oil viscosity.



**2** Another exclusive Winkler feature—the FUEL AERATOR. This "Rollator" type pump intimately premixes oil and air.



**3** The Winkler FLAME CONTROLLER controls secondary air to produce correct air patterns for the capacity of Fuel Meter.



**4** The Winkler NOZZLE has an opening approximately 30 times larger than in high pressure burners. It's clog-proof!

**W**HAT dealer couldn't step up his profits with a Winkler LP\* Oil Burner? Here are features which produce oil savings as great as 65%.

The exclusive Winkler Fuel Meter, for example, which always measures out *the same amount of oil regardless of viscosity*. It therefore maintains a constant fuel-air ratio, which means high CO<sup>2</sup>, low stack temperature and clean, smokeless, efficient operation.

Now look at other Winkler features—see illustrations 2, 3 and 4 above. The combined effects of thoroughly premixing oil and air, the proper control of secondary

air and the non-clog Winkler nozzle all contribute to the most amazingly economical and service-free operation you have ever witnessed!

The Winkler LP\* burns as little as ½ GPH—eliminates the need for oversizing—ends inefficient short runs—is not critical of oil—and slashes service costs! You can *prove* Winkler superiority with the Winkler Demonstration Unit right in your own show-room—sell new and present oil burner users on the spot.

Every day you wait is costing you profits—write today for complete information.

# WINKLER

Automatic Heating Equipment

U. S. MACHINE CORPORATION  
Dept. O-A3,  
Lebanon, Indiana



## A COMPLETE MANUAL ON HOW TO FABRICATE STAINLESS STEELS

HERE in a brand-new ARMCO manual is the know-how you need to fabricate those profitable stainless steel sheet metal jobs. It contains the latest information on every metal-working operation, from simple forming to cleaning.

This is the first time that such complete data has been made available to the industry. It's up-to-date, well-organized for easy

reference, and fully illustrated with charts, drawings and photographs.

Don't delay—send for your copy *now!* Just fill out the coupon and mail it to Armco Steel Corporation, 133 Curtis Street, Middletown, Ohio. *And be sure to give us the name of the distributor from whom you purchase stainless steel.* Export: The Armco International Corporation.

### THIS MANUAL HAS NEWEST DATA ON:

- Forming • Riveting
- Cutting • Soft Soldering
- Drilling • Silver Brazing
- Tapping • Surface Finishing
- Welding • Cleaning

## ARMCO STAINLESS STEELS



**MAIL THIS  
TODAY!**

ARMCO STEEL CORPORATION, 133 Curtis St., Middletown, Ohio  
Yes, I'd like a copy of Armco's new "Stainless Fabricating Tips" booklet.

Name

Firm Name  Position

Street Address

City  Zone  State

WE BUY STAINLESS FROM:



# MEMO

*Today  
Thermodrive is  
developing new customers  
for tomorrow*

**WEBSTER ELECTRIC**  
**Thermodrive**  
REG. U.S. PAT. OFFICE

Today modulated warm air heat is an accepted fact and now is the time to plan ahead and secure a greater number of customers to maintain high sales volume for tomorrow.

Thermodrive is a Door Opener . . .

. . . that will produce those extra sales, as it meets ready acceptance by home owners who are users of forced warm air heat . . . it saves heating costs and gives greater home comfort.

Here's What Thermodrive Does . . .

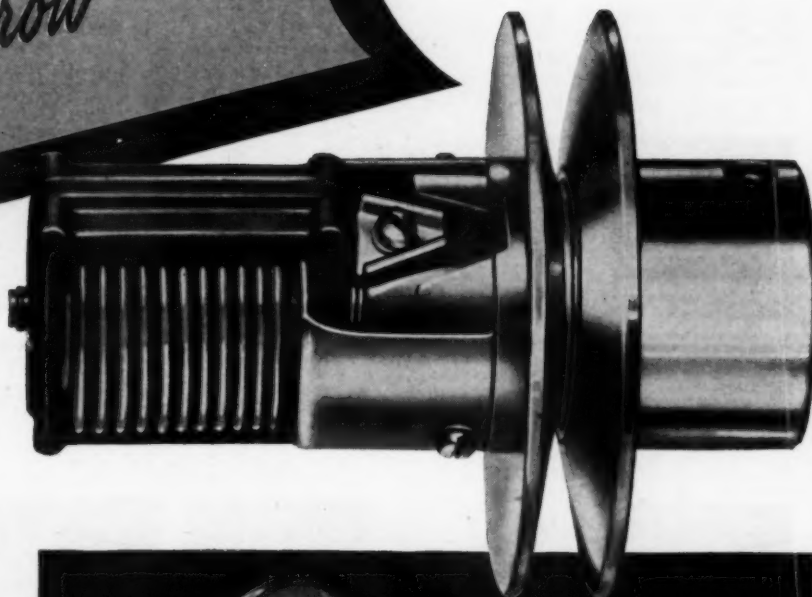
Thermodrive regulates the flow of warm air heat in the home. A sample of warm air from the bonnet of the furnace is passed over a thermostatic bellows . . . this changes the diameter of a split pulley which in turn regulates the blower speed and modulates the flow of warm air. Here is warm air distribution coordinated with the heat as generated.

Here is How Thermodrive is Sold . . .

Thermodrive is reasonably priced and insures you a worth-while profit. It is sold as a complete unit ready to install . . . with all necessary parts as shown. Full instructions for installation accompany each unit.

Write For Full Details

Act today! Secure new customers . . . increase and protect your sales volume.



**WEBSTER**  
RACINE



**ELECTRIC**  
WISCONSIN

Established 1909

Export Dept.: 13 E. 40th Street, New York (16), N. Y. Cable Address "ARLAB" New York City

**"Where Quality is a Responsibility and Fair Dealing an Obligation"**

# Schaefer BRUSHES

"BUY SCHAEFER....IT'S SAFER"

Performance tested, SCHAEFER Brushes offer longer wear, better service, greater value—with the *correct* brush for every industrial and domestic use.

## SCHAEFER Flue and Boiler Brushes of SILVER BRITE Rust-proof Wire

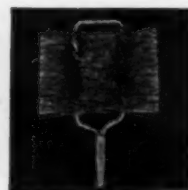
SCHAEFER'S special alloy "Silver Brite" rustproof spring steel wire has been developed for longer wear, more effective cleaning. It offers extra value, extra satisfaction in any brush.



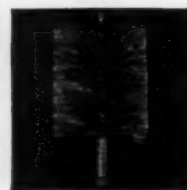
**SCHAEFER**  
Rectangular Flue Brushes  
No. S-415—3"x4"x4 1/4"  
No. S-416—3"x5"x4 1/4"



**SCHAEFER**  
Boiler Brushes  
No. S-393—1 1/4"x4"x5 1/4"  
No. S-394—3 1/4"x6"x6 1/4"  
No. S-395—3 1/4"x6"x6 1/4"



**SCHAEFER**  
Boiler Brushes  
No. S-390—1 1/4"x4"x4 1/4"  
No. S-391—3 1/4"x6"x4 1/4"  
No. S-392—3 1/4"x6"x6 1/4"



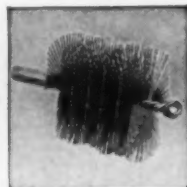
**SCHAEFER**  
Boiler Brushes  
No. S-396—3"x4"x6"  
No. S-400—3 1/4"x4 1/4"x6"  
No. S-401—3"x5"x6"



**Single and Double Spiral Flue Brushes**  
No. S-422—Single Spiral —1" to 4" dia.  
No. S-423—Double Spiral —1" to 4" dia.  
No. S-424—For small Flues, 1/4" to 1" dia.



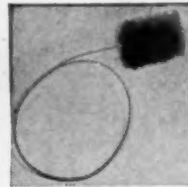
**SCHAEFER Round Flue Brushes of Single Spiral, Flat Steel Wire**  
No. S-430—1" to 4" dia.



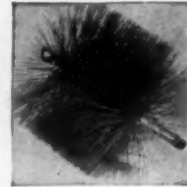
**SCHAEFER Rectangular Flue Brushes of Flat Steel Wire—Spiral**  
No. S-420—2"x2 1/4"x4"  
No. S-425—2 1/4"x6 1/4"x7"



**SCHAEFER Furnace Brushes of Silver Brite Rustproof Steel**  
No. S-442—3", 4", 4 1/2", 5" with 5 ft. handle.



**SCHAEFER Fibre Furnace Brushes**  
Selected Basina fibre, flexible wire stem, 4", 5", 6" dia., 48" and 60" handle.  
No. S-444-445



**SCHAEFER Chimney Cleaning Brushes**  
No. 65—6", 7", 8", 10" and 12" dia. round style of Black Tempered Brush Wire.  
No. 66—6", 7", 8", 10" and 12" dia. oblong style of Flat Tempered Steel Wire.



**SCHAEFER Wire Wheel Brushes**  
Solid Center Type of crimped steel wire.  
No. 376—6" dia. x 1 1/4" face.  
No. 378—8" dia. x 1 1/4" face.  
No. 380—10" dia. x 2" face.



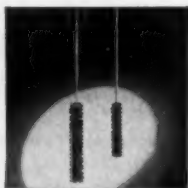
**SCHAEFER Handy Wire Brush**  
No. 318—For roughing, soldering, etc., 6" long, tempered steel wire trimmed 1 1/4".



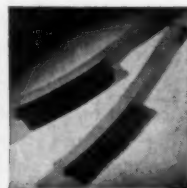
**Tin Handle Acid or Dope Brushes**  
selected grade bristles in tin ferrula. Width, 1/2", 3/4", 1".



**T. W. Flat Acid Brushes**  
Tinner's soldering brush, horsehair filling, 1 1/4" width, 7 1/2" overall. Twisted wire handle.



**Radiator or Condenser Tube Brushes**  
Twisted in wire handle, selected hair or bristle. Wide range of sizes. No. 10—1/2" dia. x 2" brush x 6 1/2" overall.  
No. 11—1/4" dia. x 2" brush x 8 1/2" overall.



**SCHAEFER Curved Handle Wire Brushes**  
No. 810—Oil tempered steel wire, trimmed 1 1/4", hardwood block, 14" long. Brush 6", 2, 3 or 4 rows.



**SCHAEFER Shoe Handle Wire Brushes**  
No. 812—Oil tempered rustproof wire, 5" brush, 2, 3, 4 rows. Trim 1 1/4", overall 16".



**SCHAEFER Straight Back Wire Brushes**  
No. 800-11—Oil tempered steel wire. Hardwood block, 7 1/4" x 3 1/4". Wire trim, 1 1/4", 6 x 19 rows.



**SCHAEFER Vacuum Cleaner Brushes**  
No. 1005—Basina Fibre Brush, 10 1/4" dia. tapered to 5" dia. x 6 ft. long—48" handle with threaded nipple at end.  
No. 1000—Basina Fibre Brush, 10 1/4" dia. brush x 10" long. Handle 35" with threaded nipple at end.

### Wire Flue Brush and Extension Handles

- 4 ft. Handles with Nipple and Coupling.
- 5 ft. Handles with Nipple and Coupling.
- 6 ft. Handles with Nipple and Coupling.

Write for SCHAEFER Catalog of flue and furnace brushes, or for information on any special brushes for specific requirements.

**SCHAEFER BRUSH MFG. CO.**  
1025 South Second Street Milwaukee 4, Wisconsin

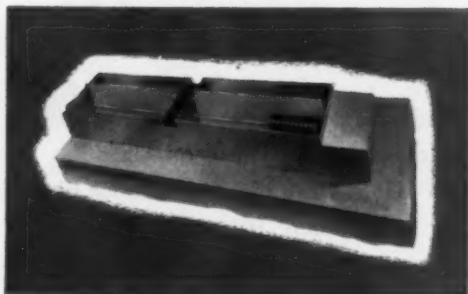
# A NATIONALLY ADVERTISED Winter Air Conditioner...

## That Helps You Sell UP

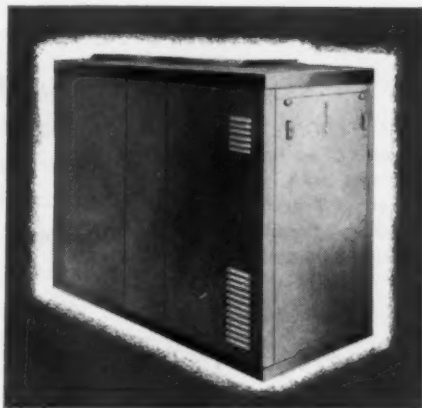
**KAUSTINE** offers you a complete line of Oil Fired Winter Air Conditioners for the home... topped by a nationally advertised De Luxe Model.

Here, in these 5 models, you will find units for every home and every pocketbook, with ratings from 60,000 to 270,000 B. T. U.

The De Luxe Units, as advertised in *Better Homes and Gardens*, include these De Luxe features—Air-flo-Meter, factory wired controls on front panel, service door electric switch, extended limit control—in addition to the features of the basic model... giving you an opportunity for extra profit while providing your customers with greater wintertime heating comfort.



**KAUSTINE AIRFLO-METER**—the *MAJOR* control of De Luxe equipment—automatically modulates the flow of air to eliminate the drafty sensation that causes what heating engineers know as a "cold seventy." The Airflo-meters are placed immediately on top of the furnace casing. They are connected to the return (cold) intake, to the warm air outlets, and to the ducts of the heating system.



**BASIC MODELS**, without De Luxe features, are for installation where price is a major factor. 4 sizes—from 80,000 to 270,000 B.T.U. Pressure type blower forces filtered, pre-heated air over large streamlined combustion chamber. Radiation shields keep air in constant contact with heating surfaces.

High Boy (65,000 B.T.U.) and Low Boy (60,000 to 80,000 B.T.U.) factory assembled units are also available.

Write for complete information to **KAUSTINE COMPANY, INC.**  
Perry, N. Y., Dept. CB



# Kaustine

COMPANY, INC.  
PERRY, NEW YORK

**BACKED BY NATIONAL ADVERTISING**  
... BY MORE THAN 34 YEARS SERVICE  
TO THE AMERICAN HOME OWNER

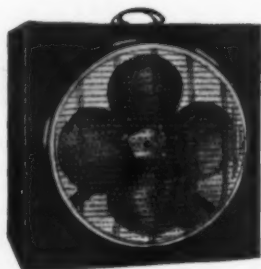
MODULATED WARM AIR FURNACES... SEPTIC TANKS... SEPTIC  
SEWAGE DISPOSAL EQUIPMENT... METAL TILE CONNECTORS...  
OIL AND GASOLINE STORAGE TANKS... HYDRO-PNEUMATIC AND  
WATER STORAGE TANKS... PRESSURE VESSELS... TRUCK TANKS  
... CUSTOM BUILT FABRICATED EQUIPMENT... TRANSFER PUMPS



# **Fans and Blowers** **MEAN BUSINESS — in Comfort!**

When you sell comfort, you deal in something everybody wants —always! But you face tough competition now. That's why—to stay out in front—you need the best. You need the *REX line!*

## FOR SMALL JOBS . . .



14 and 16 inch blades; 1/25 H.P. Redmond motor; 3-speed switch for adjusting air movement; 4 specially designed overlapping blades.

For individual rooms, offices or small apartments, this light-weight, convenient portable model is unsurpassed. Can be carried around easily—plugged into any convenient outlet for top-grade air circulation. Smartly designed for sales-pulling attractiveness. A number one item in any sales parade.

## MEDIUM JOBS . . .

The simple reversing switch is one reason why the W-400 and W-500 model is tops for home or business convenience. During the day it blows hot stuffiness and odors out. Reverse it at night and it brings in cool air. Day or night when weather's hot—*this REX AIRATE hits the spot!*

In 24 and 28-inch models; move 4000 to 5100 cubic feet of air per minute; with simple reversing switch; belt driven 1/4 H.P. split phase motor.



## OR BIG JOBS!



Heavy gauge steel housing; up to 1 H.P. motors with in-built, thermal overload protectors. Broad, deep-pitched blades.

This popular model, installed in the attic, means comfort throughout the whole house—throughout the summer. Offers an unlimited number of applications for commercial, industrial and institutional locations — an unlimited source of sales to the wise merchant. Easily, economically installed.

## AND WINTER PLEASURE

While the memory of winter's rigors are still vivid, the alert merchant lays the ground-work for selling the solid comfort of controlled circulation of heated and filtered air. REX AIR-PAK Blower Filter Unit's top quality and low cost makes selling easy. Try it and see!

Delivery ratings from 40,000 to 400,000 B.t.u. per hour; features sturdy construction and modern design.



**AIR CONTROLS, INC.**

Div. of

**THE CLEVELAND HEATER CO.**

2310 Superior Avenue

Cleveland 14, Ohio



# NEW... SMALL WHITE-RODGERS DIAPHRAGM GAS VALVES!

**Interchangeable With Solenoid  
Valves, for Quieter Operation, at Moderate Cost!**

## 1 Ideal for Replacement

Length dimensions are identical with solenoid valves of same pipe size. Perfect for replacement; or for changeovers in production assembly.

## 2 Wider Application

Small size makes it possible to use diaphragm valves on applications where standard size diaphragm valves formerly were too large.

## 3 Solves Regional Requirement Problems

Manufacturers now can supply a diaphragm gas valve at a price only slightly higher than that of a solenoid valve.

## 4 Quieter for Floor Furnaces

Removes objectionable feature of floor furnaces, where noise is amplified by floor acting as sounding board.

## 5 Ideal for Unit Heaters

Particularly suitable for unit-heater applications because of small size and relatively large gas capacity.

## 6 Same Quality Performance as Larger Sizes

Features dependable operation and simplicity of construction. Easy to dismantle for cleaning.

## 7 First Time Available in 1/2-inch Size

Never before has so compact a diaphragm valve been available in the White-Rodgers line.

## 8 Available With or Without Manual Reset

Manual reset available, if desired, at slight additional cost. Manual reset is automatically recycling.

## 9 For Natural, Manufactured or Mixed Gas

Regardless of local usage, these new, smaller diaphragm valves will give positive satisfaction.

*Write today for catalog sheet and engineering data on the new 1/2" Diaphragm White-Rodgers Gas Valve.*



ST. LOUIS 6, MISSOURI

# Draft-O-Stat

TRADE MARK REG.

BAROMETRIC DRAFT CONTROL

...will help you build  
**CUSTOMER GOOD WILL  
and PROFITS**

Anything you can do for your customers to cut their fuel costs, give them greater heating comfort, reduce smoke and soot, and lighten their task of furnace tending, will pay off in good will, increased sales and profits. That's why it's good business to install Draft-O-Stat on every new installation, on repair jobs—or any other jobs where the furnace is not now equipped with adequate draft controls. Designed for greatest efficiency and long life, it insures a steady, unchanging rate of chimney draft, providing maximum utilization of furnace heat.

TOP PERFORMANCE IS INSURED BY THE FOLLOWING FEATURES



Model "A" Draft-O-Stat (original design) available in domestic sizes 14" to 20"; commercial sizes 16", 18", 20" and 24"; industrial sizes 24", 30" and 36".

There is only  
**ONE DRAFT-O-STAT**  
and HOTSTREAM makes it!

**The HOTSTREAM Heater Co.**

2363 EAST 69th STREET • CLEVELAND, OHIO

Manufacturers of water heaters and draft controls

## NEW LITERATURE

Use Coupon on Page 121

### Soldering Handbook .....221

A new edition of a handbook entitled *Notes on Soldering* has been published by the Tin Research Institute of Middlesex, England. In it, W. R. Lewis reviews the results of research on the soldering process and presents a compilation of the more important facts which should be of value to solder-users in many industries.

Advances in soldering technique, with particular reference to mass production methods of assembly, are discussed and the various forms of solder and methods of applying heat to the joints are described in outline. These principles may be readily adapted to specific applications.

In addition to the discussion of these fundamentals, special methods of soldering aluminum, stainless steel, and other alloys are given.

The behavior of solders at various temperatures, under tensile and shear stresses, and under creep conditions is important to the designer and to the production engineer. For that reason, data on these properties, together with notes on the metallurgical constitution of the tin-lead solders, is included.

*Notes on Soldering* contains 88 pages, 47 photographs and diagrams, as well as an adequate bibliography.

Battelle Memorial Institute, Columbus 1, Ohio.

### Manual on Adhesives .....222

An illustrated reference manual contains complete information on a line of sealers, surface coatings, cements, mastics, emulsions, and other adhesives for use with various types of insulation. Detailed discussions of the basic properties and uses of these products are set forth in 16 attractively designed pages, many of which include illustrations showing an application of these products to ductwork and heating installations.

The text contains information on viscosity, coverage, flammability, heat flow, and resistance to acids and alkalis. Also included is a concise reference chart which summarizes bonding and drying times, colors, temperature limits, types of thinner, and application data for each type of adhesive material.

Benjamin Foster Co., 4601 W. Girard Ave., Philadelphia 31, Penn.

### Pipe and Fittings Catalog .....223

Complete information as to sizes and prices on furnace pipe and fittings, prefabricated ducts, and many other heating system accessories are given in a new 20-page catalog. A table of contents on the inside front cover makes it easy for the reader to find information on the particular item in which he is interested.

The catalog, designated as Catalog No. 10 GAC, is bound in stiff cover paper and punched for a three-ring binder.

Corbman Bros., 315 N. Seventh St., Philadelphia 6, Penn.





**IT'S AN INSIDE JOB**

**Coroaire's Unbeatable Economy And  
Efficiency Is Due To The Patented  
Heat Exchanger In Every Unit**



**C**OROAIRE heating equipment is far ahead of the field in economical heating and proven fuel savings. Here's why . . . it's the built-in efficiency feature of the exclusive, patented, Coroaire heat exchanger, with its 46 Venturi tubes.

This cast iron heat exchanger provides five times greater heat-radiating surface. It retains the heat longer because of greater flue travel. The Venturi tubes cause the air to spin and continuously rotate. A greater percentage of air is heated. A

generous supply of heat is provided. Clean humidified warm air reaches remote rooms.

That's why savings up to 50% on fuel bills are reported everywhere.

You need the advantages of this modern heating equipment in your market. Write for complete details of this valuable franchise.



**Coroaire**

**THE COROAIRE HEATER CORPORATION, Cleveland 15, Ohio**

AMERICAN ARTISAN, March, 1949



## NEW LITERATURE

Use Coupon on Page 121

### Inert Gas Welding Bulletin.....224

Inert gas welding, important process in the industrial welding field, is the subject of a bulletin just introduced. Practical and helpful information is given to all who are interested in the use of helium, argon, or atomic hydrogen arc welding, methods which are revolutionizing the welding industry.

Specifically, the bulletin deals with the tungsten electrodes, vital factor in the success of inert gas welding. Photographs illustrate the uniform, clean welds, without grinding or polishing, made by inert welding with 99.9 per cent pure tungsten electrodes.

*Fansteel Metallurgical Corp., North Chicago, Ill.*

### Conversion Burner Booklet.....225

Complete information on a conversion gas burner is available in a 20-page booklet. Included are descriptions and illustrations of 18 points of interest about the burner, such as a new combustion feature and pilot and control developments. Typical installations, as well as the owner's guarantee and warranty, are illustrated.

The burner is designed for use with natural, manufactured, mixed, LP, and butane air gases and is manufactured in compliance with AGA requirements for construction and performance.

*Kindl-Aire Corp., 1480 W. 112th St., Cleveland 2, Ohio.*

### Aluminum Ductwork .....226

Use of Kaiser aluminum for construction of modern, efficient ductwork is discussed in an attractive 19-page brochure. A preface containing descriptions and illustrations of ductwork installations in some of the country's largest department stores is followed by an outline on the advantages of the use of aluminum in ductwork. Heating efficiencies of aluminum ductwork are compared to those obtained with ductwork of other materials.

This section is followed by illustrations of ductwork installations in large industrial plants, and the last four pages of the brochure are devoted to recommendations for sizes, sheet thicknesses, reinforcements, bracings, and construction methods for aluminum ducts.

*Permanente Products Co., Oakland, Calif.*

### Heating Control Handbook.....227

The purpose of a recently published handbook which applies to all oil, gas, and stoker fired heating systems, is to supply the control installer and service man with helpful suggestions for solving the installation and service problems frequently encountered. This 72-page illustrated booklet contains many tips on quick and efficient servicing of heating equipment which have proved useful to the industry in the past.

Subjects covered include code identification, control circuits, thermostats, limit controls, oil, gas, and stoker controls, trouble shooting, transformer specifications, thermostat heaters, among others.

*Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., South, Minneapolis 8, Minn.*

## REPEAT PROFITS

GENERAL FUEL OIL FILTERS WITH THE  
RED TOP FOR LARGE FURNACES  
OR BOILERS • HOT WATER  
HEATERS • SMALL  
FURNACES  
SPACE  
HEATERS

Model 1A-25.  
4 3/4" High.  
3 1/2" Dia. Fil-  
ter Unit Sur-  
face 31 Sq.  
In. 3/8" Pipe  
Openings.

STANDARD MODEL  
1A-25

Model 2A-  
700. 6 1/4"  
High. 4-5/16"  
Dia. Filter  
Unit Surface  
72 Sq. In. 3/8"  
Pipe Open-  
ings.

General  
FUEL OIL FILTER  
MASTER MODEL  
2A-700

Model 2A-  
300. 9-1/16"  
High. 5 1/2"  
Dia. Filter  
Size 63 Cu.  
In. 3/8" Pipe  
Openings.

General  
FUEL OIL FILTER  
DELUXE MODEL  
2A-300

### YEARLY DIVIDENDS

After making the original sale of a GENERAL FILTER, dealers make a dividend each year through the sale of replacement cartridges. The customer, of course, returns to the dealer who made the original installation—and installation is so simple that it can be made in less than two minutes.

If you haven't already done so, investigate the profit possibilities of GENERAL FILTERS. See that each one of your customers has one.

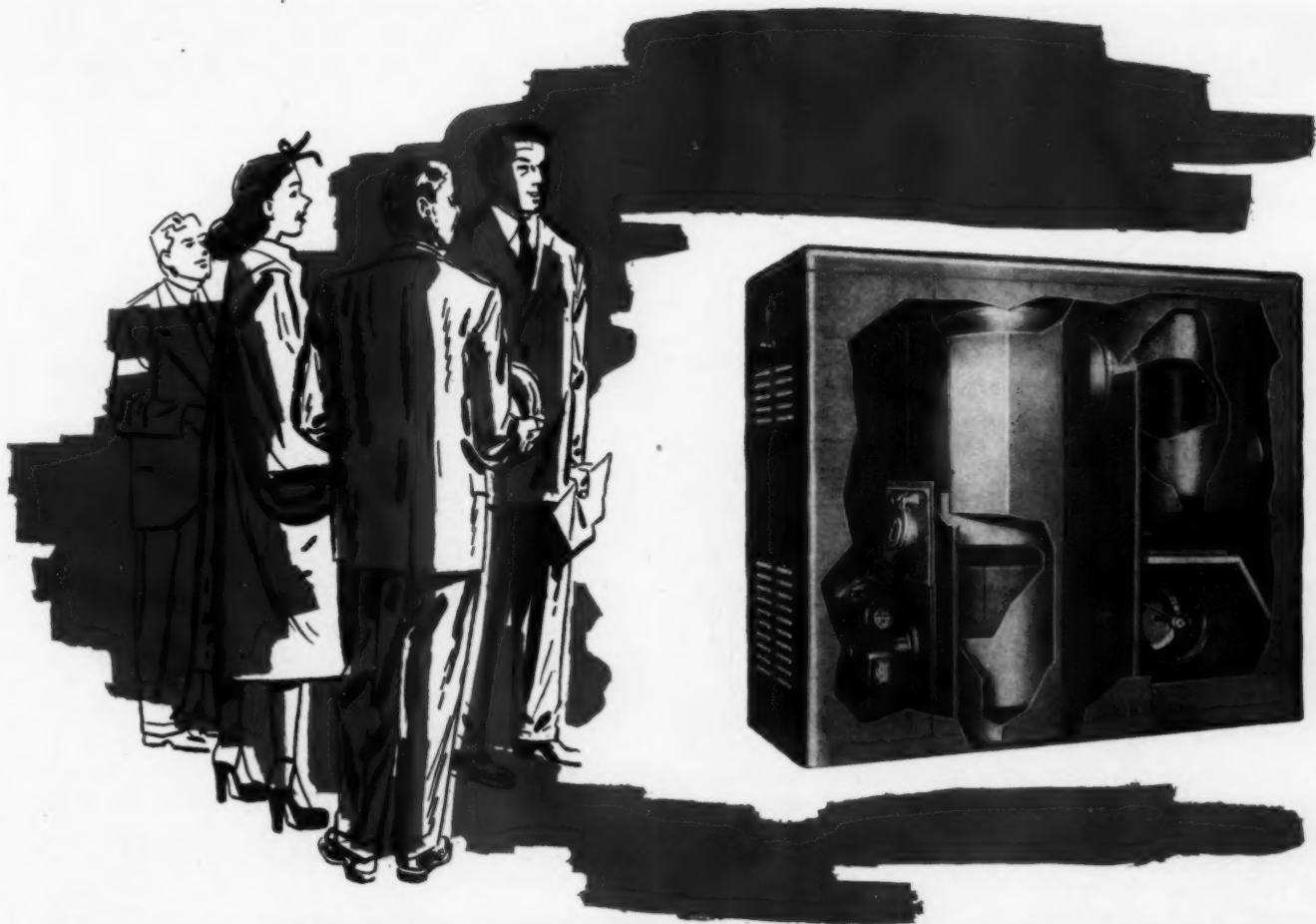
**WRITE FOR THE NAME OF YOUR NEAREST JOBBER**

GENERAL FILTERS  
INCORPORATED

**GENERAL FUEL OIL FILTER**

12890 WESTWOOD AVE.  
DETROIT 23, MICHIGAN

CANADIAN FACTORY BRANCH: GENERAL FILTERS CANADA, LTD., 173 STRACHAN AVE., TORONTO 3, ONTARIO



## SELL "CERTIFIED" RELIABILITY

The Northwest's "ZERO-PROVED" Heating Unit.

Your customer will recognize the benefits of a heating unit that is designed to meet the requirements of Northwest winters. The special double body structure produces maximum heat transference. There's eye appeal, too. The entire unit is enclosed in a handsome square casing with baked enamel finish. The Certified Counterflow is easy to sell anywhere, to install anywhere and to convert for use of any fuel. The Certified oil burner and gas conversion burner are designed to fit all Certified Furnaces.

The Certified Counterflow size range is *complete*. You can supply the right unit for every home, from the smallest to the most spacious.

Eight units for coal, oil and gas firing, available in bonnet outputs of 90,000 to 325,000 B.T.U.



Write for Bulletin 832-C



*"The Quality Line of Warm Air Heating Equipment"*

**CERTIFIED FURNACE CO.**

DIVISION OF STAINLESS & STEEL PRODUCTS COMPANY  
1000 BERRY AVE. ST. PAUL 4, MINN.



## NEW LITERATURE

Use Coupon on Page 121

### NBFU Heating Standards . . . . . 228

Safety standards for the installation of heat producing appliances, air conditioning systems, and similar equipment are outlined in a pamphlet issued by the National Board of Fire Underwriters. It also includes standards for all types of heating appliances and equipment now in common use.

Much of the information in this pamphlet was included in the 1943 edition of the NBFU Recommended Building Code but it is now available for the first time in a separate publication. All of the material was reviewed by a committee of experts and brought up to date. The provisions in this new Standard can be used by any municipality regardless of whether the community has adopted the National Building Code.

National Board of Fire Underwriters, 85 John St., New York 7, N. Y.

### Aluminum Finishing . . . . . 229

A chemical paint company has prepared an illustrated brochure on aluminum and the problems of corrosion resistance and paint-bonding.

The coating discussed, known as Alodine, is claimed to be versatile enough to be adapted to effective use

for finishing aluminum products whether produced in large or small quantities, either in continuous or intermittent production. It may be applied by spray, dip, or brush application. Whatever method is used, the manufacturer claims, Alodine will be equally effective in promoting metal and paint durability.

American Chemical Paint Co., Ambler, Penn.

### Steel in Home Construction . . . . . 230

"Let's Build a Home" is the attractive title of a new booklet outlining the importance of steel in the construction of a home. The introduction outlines the seven advantages which steel offers the home builder. These are strength, durability, safety, ease of construction, variety of design, beauty, and ease of maintenance.

The discussion which follows treats each of these advantages at some length, suggesting the many possibilities for the use of steel throughout the home from the foundation to fabricated fittings for such rooms as the kitchen and bathrooms. Each section is attractively illustrated with full color drawings of scenes depicting various operations in the construction of a home.

Especially interesting to the contractor is the modern concept of a basement with an explanation of the many jobs which steel will do in that particular section of the dwelling, especially in connection with heating systems and ductwork.

Carnegie Illinois Steel Corp., Carnegie Bldg., Pittsburgh 30, Penn.



# Create a

# Comfort Zone

FOR YOUR CUSTOMERS...

with this COMPLETE

## PACKAGED Home Heating UNIT!

The HACKER Oil Burning CABINET FURNACE is Designed and Engineered for the Average American Home . . . yet is Compact enough to fit easily in the smaller home. It's the First Choice of the Average home owner and of "Profit Minded" Heating Contractors.

100,000 B.T.U. at the Bonnett! Requires only 10 sq. ft. of floor space!

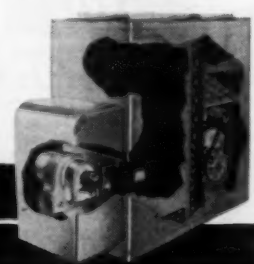
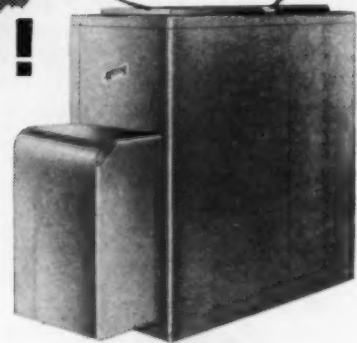
COMPACT . . . High in Efficiency, Lower in first cost . . . Longer in years of Service. Meets Competition for Added Profits! Cabinet length 50", Overall 62", Width 24", Height 52". EYE APPEAL . . . finished in beautiful Baked Metalescent.

Shipped Completely Assembled . . . two men can handle easily. Heavy steel bottom eliminates need for cementing. Nationally known Gun Type Oil Burner furnished with complete set of 4 controls.

Write for the name of the HACKER Distributor nearest you.



Stainless Steel Combustion Chamber, 12" blower, ¼ h.p. motor, air filter, Automatic Drip Humidifier and automatic Draft Control. Shipping weight approximately 525 lbs.



DEPT. D WATERLOO, IOWA



*Fireite is easily applied to any clean surface*

## Joints stay gas-tight when sealed with J-M FIREITE\*

● This easily-applied asbestos furnace cement air-sets or heat sets into a practically indestructible joint.

Fireite remains gas-tight against the highest temperatures, resists expansion and contraction strains. This is especially important for domestic oil burner and stoker installations—because better combustion results from gas-tight and air-tight joints.

\*Reg. U. S. Pat. Off.

Fireite Asbestos Furnace Cement is ready-mixed, ready-to-use. Easily worked, it can be applied quickly to any clean surface. Fireite is odorless. It keeps well on the bench and in the container. Fireite has minimum shrinkage, does not bloat, crumble or crack.

Use Fireite for mounting or repairing heating equipment—for setting ash pits and fire pots, doors, dampers and other places

where sealing is necessary. With Fireite, there is less danger of costly call-backs for re-sealing.

### WRITE FOR FREE 4 LB. SAMPLE

Let us send you a can of Fireite Furnace Cement and a copy of folder RC-7A. Simply write giving your name and the name of your company. Address  
Johns-Manville, Box 290, N. Y.



# Johns-Manville

# FIREITE

asbestos furnace cement



## You'll Never Miss with KRESKY OIL HEATING EQUIPMENT

Because Kresky, and only Kresky, gives you a double-barreled sales weapon.

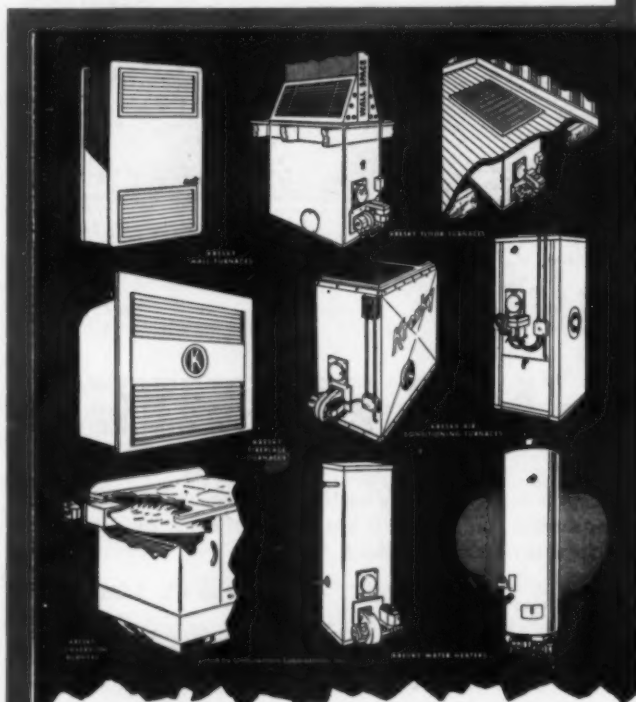
### BARREL NO. 1 — A MODEL FOR EVERY NEED

There's a Kresky model for every need. Your prospects may have special problems, or be just plain finicky, but there's a Kresky model, type and size that will get you the sale.

### BARREL NO. 2 — YOU CAN DEMONSTRATE KRESKY

You can actually demonstrate in a moment why the famous Kresky Forced Air Induction Oil Burner, the heart of all Kresky equipment, is superior.

Send Today For New Information on New Profits For You With KRESKY



**KRESKY MANUFACTURING CO., INC.**  
320 H STREET, PETALUMA, CALIFORNIA

Please send me full information.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

**THE KRESKY LINE IS THE COMPLETE LINE**

## INDUSTRY ITEMS

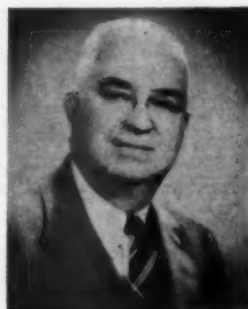
WHITE-RODGERS ELECTRIC CO. has recently established a nation-wide system of Exchange Agencies, authorized to furnish repair and replacement service on White-Rodgers controls. These agencies will also serve as a source of information on controls and control systems by furnishing catalogs, service manuals and other pertinent data.

This new service will be especially welcomed by dealers and servicemen of heating and refrigeration equipment as it furnishes them with a local source of information, in most cases within reach of telephone.

Also, it affords them immediate replacement service on damaged or inoperative controls which formerly had to be sent back to the factory for service.

The agencies also will stock certain control parts and subassemblies required by servicemen in their service work. For additional information and complete list of agencies and locations write to White-Rodgers Electric Co., 1209 Cass Avenue, St. Louis, Missouri.

E. M. FORD, sales manager of the Industrial Division of Webster Electric Co., Racine, Wisconsin recently retired. One of the pioneers in the development of the oil burner industry, he had been connected with the company for thirty years.



E. M. Ford



B. T. Wiechers

Ben T. Wiechers, who has been with Webster since 1930 and Mr. Ford's assistant in the Industrial Division for the past several years, has been named to take his place.

Early developments in the industry in which Mr. Ford participated were the evolution of the direct ignition transformer and the first two-stage fuel unit with pump, valve and strainer all contained in one unit.

EARL L. BEDARD, sales manager of the Mt. Hawley Mfg. Co., Peoria, Illinois has been elected vice president of the firm. He will continue to direct Mt. Hawley's national sales and advertising program.

Mr. Bedard is well known in the oil heat industry, having started his career in the field in 1927, when he became associated with the Progressive Machinery Co. of Minneapolis. He later organized the Oil Electric Co. in the same city. Mr. Bedard headed his own firm until 1940 when he became associated with Minneapolis-Honeywell. He was later sales manager of the Aldrich Company, Wyoming, Ill.





# One bearing failure can cost you plenty

Maybe you're not liable for *anything* after the job's installed . . . but excuses and explanations won't win an argument with a man who's burned up because his house is cold.

A loudly dissatisfied customer can make selling a lot tougher for you. That's why the bearings you specify are so vitally important to you, as well as to the customer.

Don't take chances on costly bearing failure. Specify smoother running, longer lasting Randall Pillow Blocks. These self-lubricating, self-aligning bearings keep shafts rolling quietly and efficiently for the life of the equipment.

You can afford Randall quality on every job. The Randall Line now includes a wider range of models and prices than ever before . . . a Randall that's right for every air handling need.



## NORMAL DUTY PILLOW BLOCK

For general service. Double-lubricated, with graphited, phosphor bronze bushing in wool-felt-packed oil reservoir housing. For shafts 1 1/4" to 3-15/16", inclusive.

One of six pillow block types in the complete Randall Line.

## New . . . FREE

Write for Pillow Block Catalog 49, with complete data on new, low cost Pillow Block Series with *sintered* bronze bushings, revised specifications, exclusive Randall design features.



## RANDALL GRAPHITE BEARINGS, INC.

609 WEST LAKE STREET

Dept. 311

CHICAGO 6, ILLINOIS

### DISTRIBUTORS CARRYING STOCKS

The Brown Bearing Company  
Portland 9, Seattle 4

The Berry Bearing Company  
Chicago 16

Edward D. Maltby Company,  
Inc.  
Los Angeles 15, San Diego,  
Phoenix, Honolulu

C. W. Marwedel  
San Francisco, Oakland

Moffatt Bearings Company  
Philadelphia 30, Baltimore,  
Richmond, Charlotte, Atlan-  
ta, Birmingham

Syracuse Bearing Company  
Syracuse 2, Buffalo 8, Niag-  
ara Falls, Rochester 13,  
Utica

Tek Bearing Company  
Albany, Boston, Bridgeport,  
Newark, New York, Provi-  
dence, Waterbury

Salt Lake Hardware Company  
Salt Lake City 9

### CANADA

Dominion Bearings, Ltd.  
Toronto 14, Montreal,  
Winnipeg

Pumps & Power, Ltd.  
Vancouver

### CUBA

Goyanes y Alvarez  
Havana



**Available  
NOW!**



**BS & B**

**UNDERGROUND  
and BASEMENT  
TANKS**

With the facts well in hand, Black, Sivalls & Bryson's production engineers "outguessed" the fuel oil supply situation. The result is that BS & B underground and basement oil storage tanks are available NOW in quantities, all you want!

These underground and basement tanks are top quality welded steel, fabricated by a manufacturer of more than 55 years' experience. Capacity—approved by U. S. Underwriters' Laboratories. Legs extra. Write or wire TODAY for prices and complete delivery information. Black, Sivalls & Bryson, Inc., Power and Light Building, Kansas City 6, Missouri.

**BLACK, SIVALLS & BRYSON, INC.**  
KANSAS CITY, MO. OKLAHOMA CITY, OKLA.

## INDUSTRY ITEMS

NATIONAL ADVERTISING will again play a prominent part in the expanding Nu-Way Oil Burner advertising campaign for 1949, according to O. K. Gipple, sales manager, Nu-Way Corp., Rock Island, Illinois.

Using the big four of the home market—American Home, Better Homes and Gardens, House Beautiful and House & Garden—the Nu-Way sales story will reach 6,712,579 readers regularly during the coming months.

In addition to national advertising, the company will continue its extensive direct mail program, which includes local newspaper mats for dealers, an eight-page oil burner book and a catalog and instruction book.

E. M. FORD has been named district manager of the Los Angeles, California territory for Penn Electric Switch Co. according to an announcement by R. H. Luscombe, general sales manager. He replaces W. H. Krack, former manager.

Ford, formerly assistant advertising manager, has been with the company for 18 years and is well versed in automatic controls and their application to heating, refrigeration, air conditioning, engines, pumps and air compressors. The Los Angeles office will continue to be located at 736 W. Washington Blvd.

## H&C KWIK-WAY DAMPER REGULATOR SETS



Most Easily and Quickly  
Attachable Sets on the Market

**STURDY • RATTLE-PROOF  
NO ANVIL REQUIRED**

**IDENTICAL 5/16"  
RETRACTABLE BEARINGS**



Simply slip the bearing over the edge of the damper at the bearing line. Lay on any firm surface and strike one solid hammer blow. The prong pierces the damper and is clinched securely in place by the heavily ribbed underside construction of bearing. Fastening is permanently solid, rattle-proof. Identical bearings with retractable bolt make easier installation of regular or splitter dampers in round or square ducts.

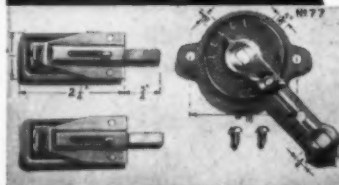
### LIST PRICES

No. 70 Set. . . . . \$0.30  
No. 77 Set. . . . . 0.40

### FOR LARGE DAMPERS

No. 50 3/4 Set. . . . . \$0.60  
No. 80 3/4 Set. . . . . 0.60

See your jobber or  
write for literature.



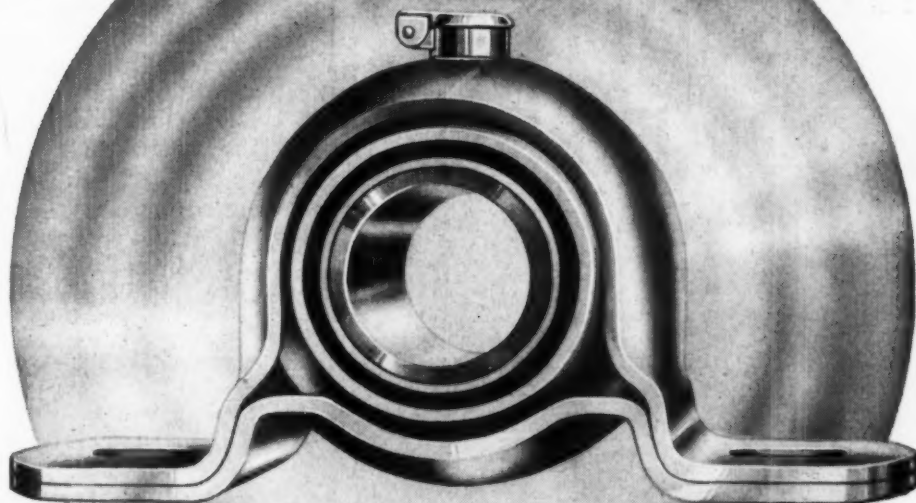
**HART & COOLEY MANUFACTURING CO.**  
HOLLAND MICHIGAN

In Canada: Hart & Cooley Mfg. Co., Fort Erie, N. Ontario

# Triangle ~~SHOCK~~ <sup>ABSORBING</sup> Pillow Block

- PROVEN DESIGN
- BUILT-IN CUSHIONS
- NEW LOW PRICES

Send for  
Details Today



SPECIAL MOUNTINGS DESIGNED TO MEET SPECIFIC NEEDS

**TRIANGLE MANUFACTURING CO.**

392 DIVISION STREET

OSHKOSH, WISCONSIN

the popular and profitable

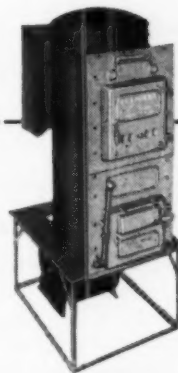
## Peerless Line for 49!

The five PEERLESS furnaces shown here comprise the most advanced line of warm air furnaces ever offered for the home market. Refinements in design and construction give you many advantages with which to outsell competition—and there is a PEERLESS furnace to meet every customer's requirements.

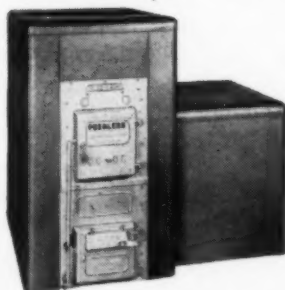
THE SENSATION is a deluxe steel furnace for stoker or hand firing; large blower, automatic humidifier. THE MASTER is an auto-

matic furnace for oil or gas. THE HIGH BOY (illustrated with case removed) is ideal where space is limited; blower forces maximum heat to registers. THE STEEL ROUND-CASE furnace is a favorite for either stoker or hand firing. THE COMBINATION furnace heats economically with either oil or coal.

Write or wire today for complete description of this popular and profitable PEERLESS line.



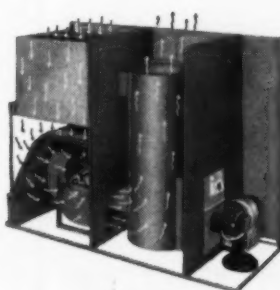
HIGH BOY



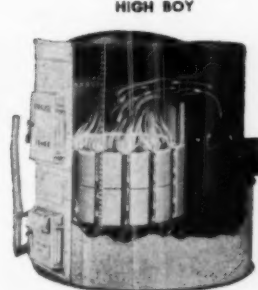
THE SENSATION



THE COMBINATION



THE MASTER



THE STEEL ROUND-CASED

**THE PEERLESS FOUNDRY COMPANY**

1855 LUDLOW AVENUE  
INDIANAPOLIS 7, IND.



# JOHN ZINK "SHORTY" FLOOR FURNACE



— ONLY 26" DEEP —

Two Sizes Available

30,000 Btu — 50,000 Btu

AGA Approved for Natural,  
Manufactured and Liquified  
Petroleum Gases

These new floor furnaces are especially designed for installation where under-floor space is limited. Being only 26" deep, they can be installed where foundations are extremely low, eliminating the necessity of making a pit.

Write for Literature

## John Zink Company

4401 South Peoria

TULSA, OKLAHOMA

New York — Salt Lake City — Houston — Los Angeles

## INDUSTRY ITEMS

E. S. McKay of Schenectady, New York has been named advertising and sales promotion manager of the General Electric Company's Air Conditioning Department, with headquarters at Bloomfield, New Jersey. Mr. McKay had been assistant to the manager of employee and community relations in the G. E. Apparatus Department.

A native of Platte, South Dakota, he came to General Electric in 1933 following his graduation from the University of Michigan. With the exception of two years when he was out of the company, he has held positions of increasing responsibility ever since.



E. S. McKay



J. H. Reock

JOHN H. REOCK has been appointed assistant to general sales manager of the L. J. Mueller Furnace Co., it was announced recently.

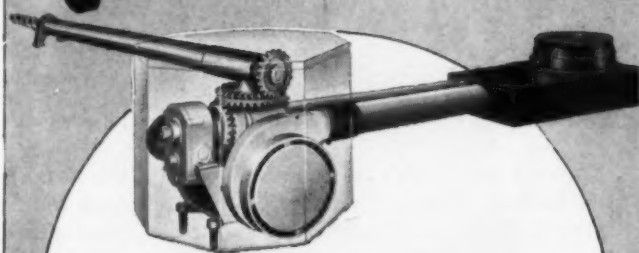
Reock formerly was assistant sales promotion manager of the Iron Fireman Mfg. Co. in Cleveland, Ohio. In his new capacity he will assist the general sales manager in the supervision of all advertising and sales promotion activities for the company.

EXPANSION OF THE KAISER ALUMINUM sales organization in the Midwest has been announced by Charles S. French, Central Divisional Manager for Permanente Products Company. Effective immediately, three district sales offices have been established to handle sales in eleven midwestern and southern states.

C. S. Barnum is sales manager of the Detroit district, covering the state of Michigan. Robert F. Black, recently transferred from Permanente's Houston office, heads the Cleveland sales office, handling accounts in northern Ohio. Thomas A. Johnson, recently promoted to the position of Cincinnati District Manager, supervises sales in southern Ohio, West Virginia, Tennessee, western North Carolina, South Carolina, Mississippi, Alabama, Georgia and Florida. A branch sales office in Atlanta is attached to the Cincinnati office.

This recent change brings to nine the total number of Permanente district sales offices throughout the country, with eight additional branch offices. Headquarters of the company are in Oakland, California, with producing units located in Spokane and Tacoma, Washington; Permanente, California; Newark, Ohio; and Baton Rouge, Louisiana.

# NEW!



## BITUMINOUS FURNACE TENDER

### Universal Binfeed

Now for the first time ANCHOR offers a bituminous universal binfeed model stoker. The new FURNACE TENDER is designed to handle bituminous coal automatically from coal bin to furnace bowl. The new FURNACE TENDER completely satisfies all present day heating requirements — comfort, convenience, economy! Conveyor tubes are adjustable in any direction . . . worms are of long-life stainless steel . . . transmission is silent . . . and the new straight shear pin can be instantly, easily replaced. All these and many other new sell-able features are found in the new bituminous FURNACE TENDER.

*Choice franchises now open! For descriptive literature of this or any of the ANCHOR complete line of heating equipment, write Anchor Division, Stratton & Terstegge Co., Inc., P. O. Box 311, New Albany, Indiana.*



OIL  
BURNER



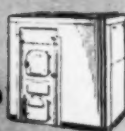
DOMESTIC  
BOILER



OIL FIRED  
FURNACE



GAS FIRED  
FURNACE



COAL FIRED  
FURNACE



ANTHRACITE AND  
BITUMINOUS STOKER

# ANCHOR

*America's Finest Heating Equipment*

**if you manufacture...**



- space heating units
- air conditioning equipment
- oil burners
- stokers
- gas heating units
- humidifiers

**you'll want to buy...**



## NATIONAL LOCK HARDWARE

**"all from 1 source"**

- simplified purchasing
- complete selection
- simplified control
- lower shipping costs
- uniform high quality
- prompt delivery



Write us for full information

**NATIONAL LOCK COMPANY**  
Rockford, Illinois

## INDUSTRY ITEMS

WALTER D. MONROE, Jr., son of the founder and late president of Chicago Steel Service Company, has been elected to succeed his father. Since 1937 Mr. Monroe has served as vice president of this warehouse steel distributing firm. He is a graduate in metallurgy of Purdue University.

Donald F. Grace, vice president, was designated vice president in charge of sales. Mr. Grace has been with Chicago Steel Service Co. since its founding in 1925 and in an executive capacity since 1930.

Thomas J. Carmody, associated with the organization since 1927, was re-elected secretary.

PECK, STOW & WILCOX Co. of Southington, Connecticut has announced its plans for marketing a rotary power table, formerly produced by Roto-Table Co. of Dayton, Ohio. This unusual unit makes it possible to apply power to as many as 8 different hand tools in the sheet metal shop, thus saving time and increasing production.

STEWART-WARNER CORP., Chicago, Illinois has announced the acquisition of the Heating Research Corp., Muncie, Indiana and its chief product, the Saf-Aire gas fired heater. Manufacture of the heater is to be carried on at the Saf-Aire division, 1603 Locust St., Anderson, Indiana. Feature of the product is the Lundstrom outside vent.

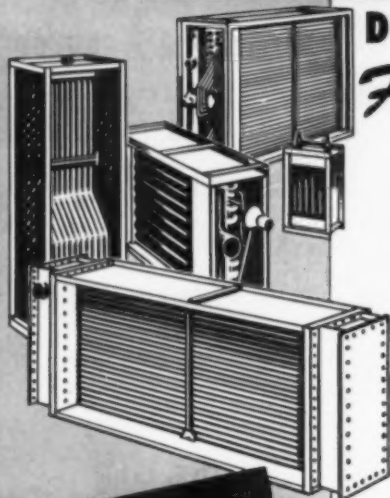


DURING THE RECENT Heating and Ventilating Exposition held in Chicago the Dravo Corp., Pittsburgh, Pennsylvania held a dinner meeting for its distributors. The photo shows the gathering that assembled for the occasion on the evening of January 25.

WILLIAM A. DIESTELHORST has joined the sales staff of Brass and Copper Sales Co., 2817 Laclede Ave., St. Louis, Missouri.

Mr. Diestelhorst was recently associated with C. G. Hussey Co. where he had spent 16 years contacting sheet metal and industrial accounts in the St. Louis area. Covering a territory that included several states he had sold copper for many famous buildings during that time.

# RIGHT



**DESIGN • MATERIALS • CONSTRUCTION**

*For Every Heating and Cooling Problem*

## AEROFIN FIN-TYPE COILS

Heat transfer is a specialized problem. And Aerofin's specialization in this one field for more than 26 years gives you all the benefits which are the result of having exactly the right design, materials and construction for the job.

Aerofin's continuous research has developed extremely efficient coils, accurately rated. You can install to full rated capacity with assurance of full efficiency for the life of the unit.

Aerofin is sold only by manufacturers of nationally advertised fan system apparatus. List on request.

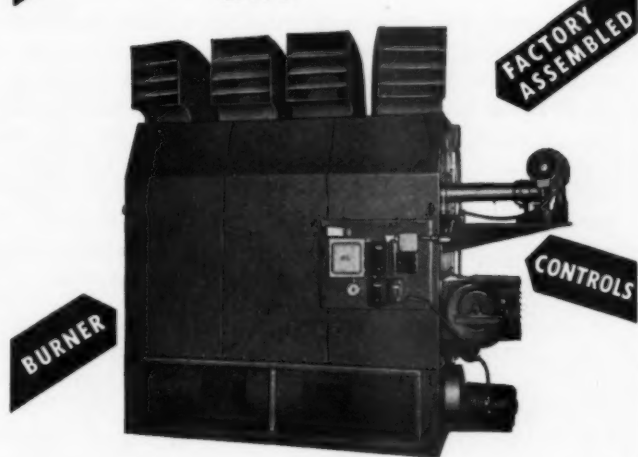
## AEROFIN CORPORATION

410 South Geddes St., Syracuse 1, N. Y.

NEW YORK • CHICAGO • CLEVELAND • DETROIT • PHILADELPHIA • DALLAS • SAN FRANCISCO • MONTREAL



**Now! A Complete  
FACTORY HEATING SYSTEM**  
is Available for  
Immediate Delivery



Factory Assembled and Wired  
for Immediate Installation.

Write for Bulletin 802 giving complete specifications on Airtherm Direct Fired Heaters.

**AIR THERM**  
MANUFACTURING COMPANY

706 S. SPRING

ST. LOUIS

AMERICAN ARTISAN, March, 1949

**It Costs No More  
to Use the Best**



*—and it may save plenty!*

THARCO is made to meet service conditions far more severe — far beyond — normal warm air furnace operation. That's why you can use it with complete confidence. It's the best insurance in the world of a gas-tight, smoke-tight job — of jobs that bring credit to your foresight and workmanship. No costly complaints, no doing the work twice — with Armstrong's THARCO. Your jobber can supply you, or write us for complete information.

**THARCO**  
*Will not shrink,  
check or powder!*

**THARCO**  
*For easier  
application!*



**THARCO**

*Asbestos Furnace Cement*

THE ARMSTRONG COMPANY

4265 So. 1st Bldg. St. 241 So. Post Ave. 319 So. Crowder St.  
CHICAGO DETROIT DALLAS



**T**O THE HEATING TRADE: Here's an OIL FURNACE unit that deserves your closest inspection. It's one of the very few truly UNIT ENGINEERED products on the market.

The Luty OIL FURNACE has many EXCLUSIVE worthwhile features that make it —

EASIER to — { — SELL  
— INSTALL  
— SERVICE

and thereby make worthwhile profits.

Let us hear from you on your letterhead. We have an interesting proposition for you.

— • —  
MANUFACTURERS REPRESENTATIVES — INQUIRIES INVITED

*Peerless Air Conditioning Company, Inc.*  
DETROIT 20, MICHIGAN

## INDUSTRY ITEMS

### *Runs Business from Hospital Room*

by Andrew J. Cronin

*Pittsburgh, Pa.*—When a man falls down an elevator shaft and breaks a hip, his right hand and suffers severe head cuts, it would be logical to assume that he would be willing to rest in his hospital bed and concentrate on recovering from his injuries.

Leroy Walker, president of the Buddlee Co., Pittsburgh distributors of Mueller Climatrol heating and air conditioning equipment, had just such an experience and wound up in a bed in a West Bend hospital.



*Pittsburgh Sun Telegraph Photo*

**Mr. Walker at work!**

It developed that they had Mr. Walker down but they most certainly could not keep him quiet and his telephone is the busiest in the hospital. His secretary comes to see him every night with the day's accumulation of mail, invoices, bills and contracts for him to examine and dispose of. By remote control he supervises all the buying and inventory of supplies at his warehouse and offices.

Recently he was permitted to sit up in a wheel chair and now uses a music stand as a working surface to sign papers he is processing.

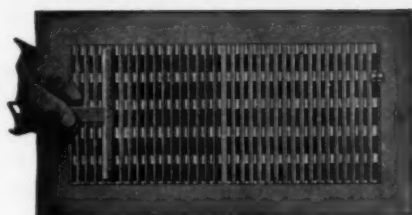
PRO-THERM IS THE TRADE NAME under which Thermo-Products, Inc., of North Judson, Indiana, is now merchandising automatic heating equipment. The Pro-Therm line includes several types of oil burning floor furnaces having approximately 50,000 btu capacities, hi-boy and lo-boy vaporizing type oil furnaces, and oil fired domestic water heaters in two sizes.

In the past Thermo-Products, Inc., has produced similar products for other manufacturers to be sold under their trade names. The Pro-Therm line offers the public a high quality of merchandise which has proved itself in the field during several heating seasons. All items carry the approval of Underwriters' Laboratories.

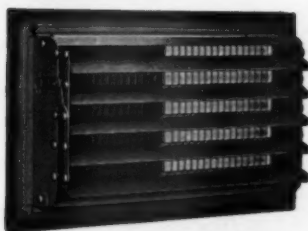
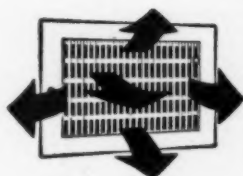
Mr. J. S. Cunningham, manager of Thermo-Products, Inc. invites any visitors to the Chicagoland area to stop in North Judson and see the Pro-Therm line of equipment.

# Independent

WROUGHT STEEL REGISTERS  
PROVIDE  
4 WAY ADJUSTABLE AIR FLOW



Design No. 238



Right . . . left . . . up . . . down . . . air flow at any angle desired, in addition to straight outward . . . plus the durable construction which has distinguished Independent products for more than 46 years . . .

238 Independent Wall Register. Vertical grille bars are manufactured at an angle of 30 degrees, one-half to the right and one-half to the left. They may be bent to direct air flow at any other right or left angle or straight outward. Horizontal multiple valves located at the back of register can be set to deflect air flow up, down, or straight outward. Available in standard sizes 8"x6" to 30"x8".



Send for New Catalog No. 48  
Always Leading—Always Progressing

## THE INDEPENDENT REGISTER CO.

3747 E. 93rd STREET • CLEVELAND, OHIO

You  
get



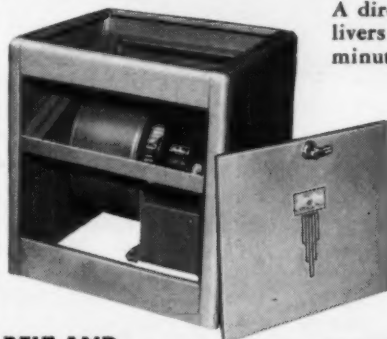
COMPLETENESS  
AND  
DEPENDABILITY  
WITH  
Profit

## IN Peerless Electric PACKAGE UNITS AND BLOWERS

• Peerless Electric blowers and package units are manufactured *complete* in the Peerless plant. Peerless is *not* an assembled line.

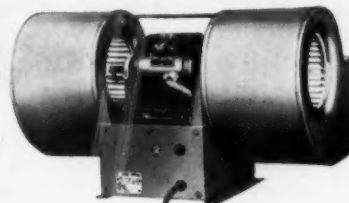
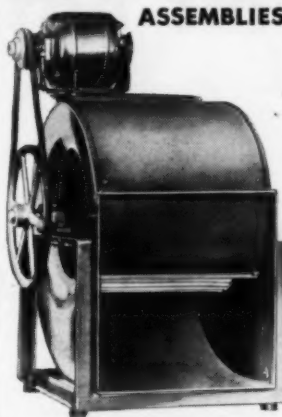
Peerless equipment is *dependable*—you minimize service worries because Peerless equipment is designed and engineered from 56 years experience in producing quality electrical apparatus. And you'll find that Peerless blowers and package units are priced right to earn a profit for you. Write for detailed information.

### PEERLESS ELECTRIC AIRBOY BLOWER ASSEMBLY



A direct drive blower that delivers 850 cubic feet of air per minute. 3-speed blower with motor blower unit rubber cushioned. Blower wheel dynamically and statically balanced. The two motor bearings are the only bearings in the unit. Also supplied with cabinet and air filters as a complete package unit.

### BELT AND DIRECT DRIVE BLOWER ASSEMBLIES



You'll find Peerless blower assemblies in many nationally-sold air conditioning furnaces of the finest quality. We furnish both of these assemblies ready to install in your own furnaces or cabinets. The many fine construction qualities of these blowers add valuable sales features to your heating units.

THE PEERLESS ELECTRIC COMPANY  
ESTABLISHED 1893 • WARREN, OHIO

## Peerless Electric

MOTORS • FANS • BLOWERS





# TURNER

(No. 475)

## Low Pressure TINNER'S FIRE POT

Ready for operation in 5 minutes • Fuel capacity one gallon; burns for 9 hours on one filling • Safer . . . reduces fire hazard of old-style charcoal burners • Soldering iron rest keeps points of soldering coppers out of direct flame . . . saves re-tinning • Complete with Turner's exclusive "Carburetor Control" . . . providing solid blue flame with more perfect combustion; also a flame control—for exact heat desired—which automatically cleans the orifice, thereby eliminating need for separate cleaner wire • Construction assembly permits quick, easy accessibility and cleaning . . . wind-shield, top-plate, and bail handle are one unit, and can be lifted from tank in five seconds by loosening one wing nut • Burner coil made of extra-heavy seamless steel tubing . . . protected by sturdy outer jacket that maintains heat without overheating . . . can be generated and used in heavy wind • The combination may also be used for melting purposes . . . *See Your Jobber!*

**THE TURNER BRASS WORKS**

LYCAMORE ILLINOIS

Since 1871

## INDUSTRY ITEMS

DAVID M. RAMSEY has been appointed manager of heating products for Jones & Brown, Inc. according to C. J. Land, general sales manager of the Pittsburgh firm. Mr. Ramsey resigned as district sales manager, southeastern territory, for the Richmond Radiator Co., and took up his new assignment with headquarters in Pittsburgh. He will be responsible for sales and distribution of the full line of the company's Ko-Z-Aire conditioning units and RAC controls.

Mr. Ramsey received his primary education in Scotland and graduated in engineering from Wentworth Institute, Boston, before doing post-graduate work in engineering at Massachusetts Institute of Technology. He is a member of the American Society of Refrigeration Engineers, the Society of American Military Engineers and is a charter member of the Air Conditioning Bureau of Boston.



David Ramsey



T. G. Leonard

T. G. LEONARD is now assistant sales manager of Coroaire Heater Corp. according to an announcement by A. W. Conley, president.

Mr. Leonard has been associated with the company since his release from the AAF three years ago, in the sales and advertising department. He is a graduate of Brown University of Providence, Rhode Island and the Babson Institute of Business Administration, Babson Park, Massachusetts.

PERFECTION STOVE Co., Cleveland, Ohio has expanded the sales staffs of several of its district offices. The new appointments follow:

Jerome H. Wilson is now on the staff of the Chicago district and has been assigned the territory of southern Indiana.

P. W. Clemens in the St. Paul district will cover the state of Montana, the western part of North Dakota and the northern part of Wyoming. Everett C. Taylor, in the same district will travel southern Wyoming, western Nebraska and western South Dakota.

George W. Smith is now in the Kansas City district and from headquarters in Austin he will handle 35 Texas counties.

David J. Musick has been added to the sales staff of the Oakland, California office.

# NATIONAL CHAMPION

## GAS and OIL BURNING

### DIRECT FIRED UNIT

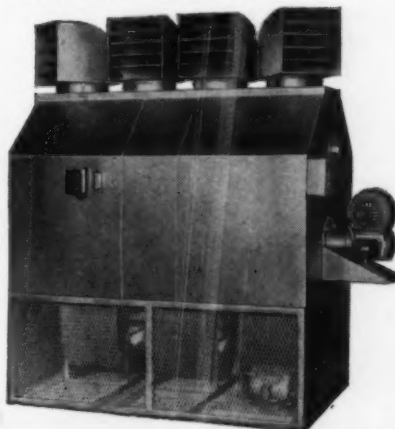
**HEAVY DUTY  
FORCED AIR  
UNITS FOR  
LARGE SPACE  
HEATING  
REQUIREMENTS**

**NATIONAL HEATER COAL FIRED**

**FORCED AIR UNIT**



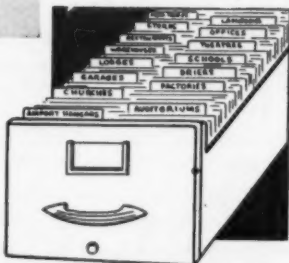
Specifically constructed and designed for stoker and hand firing with blower position at rear or side of casing, this unit embodies all the features of other NATIONAL heaters for greater satisfaction and economy of operation. Can be quickly and efficiently converted to light oil, heavy oil or gas firing as future fuel costs and supplies may necessitate.



A self-contained unit with adjustable discharge heads for positive heat delivery in any direction. Streamlined fire box of high heat and corrosion resisting Type 310 Stainless Steel insures a far longer life of service and satisfaction. Tear Drop combustion chamber design and convector tube arrangement affords complete efficient air wipe of all heating surface at minimum resistance. Available in models for central heating systems employing supply and return ducts.

**WIDE RANGE OF  
APPLICATIONS**

These units have proven practical and economical for most types of public, commercial and industrial buildings. National Champion heaters are the product of over a half century of experience in this field and the latest advanced engineering features of these units have been tested in a rapidly increasing range of actual installations.



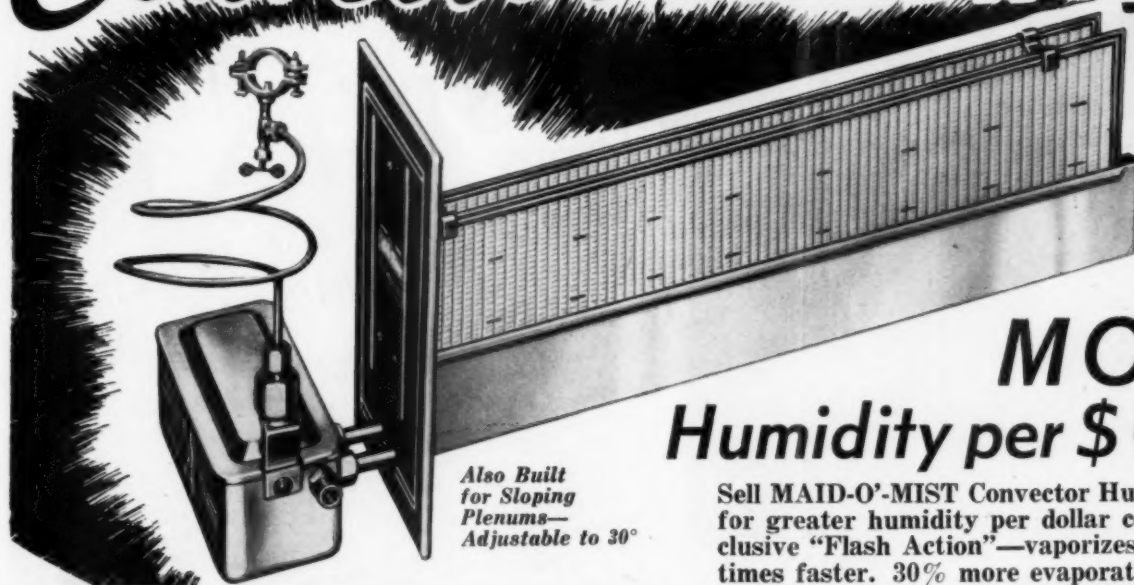
**Write for Literature**

**GENERAL CAPACITY DATA  
OIL & GAS FIRED HEATER**

Model Number	Btu	Cfm	hp	Dimensions (inches) length-width-height			Approximate Shipping Weight
T. D.—25	250,000	3,600	¾	60	32	81	1,300 Lbs.
T. D.—40	400,000	5,400	1	60	32	81	1,350 Lbs.
T. D.—50	500,000	6,600	1½	80	32	81	1,780 Lbs.
T. D.—70	750,000	8,800	2	80	32	81	1,855 Lbs.
T. D.—80	800,000	10,200	3	80	48	81	2,110 Lbs.
T. D.—100	1,000,000	12,500	5	80	48	81	2,200 Lbs.
T. D.—125	1,250,000	15,300	5	100	54	103	3,000 Lbs.
T. D.—150	1,500,000	19,400	7½	100	54	103	3,250 Lbs.

**NATIONAL HEATER CO. • CLEORA & VANDALIA STS. • ST. PAUL, MINN.**

# Convector HUMIDIFIERS



**MORE  
Humidity per \$ Cost**

*Also Built  
for Sloping  
Plenums—  
Adjustable to 30°*

Sell MAID-O'-MIST Convector Humidifiers for greater humidity per dollar cost. Exclusive "Flash Action"—vaporizes water 9 times faster. 30% more evaporative area. 60% less restriction to air flow. Completely assembled—50% less time to install. Standard equipment on America's finest furnaces. Attractively priced. Check with your jobber, or write us.

**MAID-O'-MIST INC.**

3213 N. PULASKI RD.  
CHICAGO 41, ILLINOIS



## INDUSTRY ITEMS

TWO NEW EXECUTIVE APPOINTMENTS have been announced by C. E. Lewis, president of the Perfex Corp., Milwaukee manufacturers of automatic heating controls and industrial radiators. Vice president Allen Butler has been named assistant to the president, while V. P. Black, formerly manager of advertising sales promotion and sale training for the Airtemp Division of the Chrysler Corp., has been newly appointed a vice president to fill the vacancy left by Mr. Butler, as manager of the controls division.



Allen Butler



V. P. Black

Mr. Butler joined Perfex in 1935, handling advertising and sales promotion. In 1936 he became manager of the Perfex Chicago office in charge of sales throughout

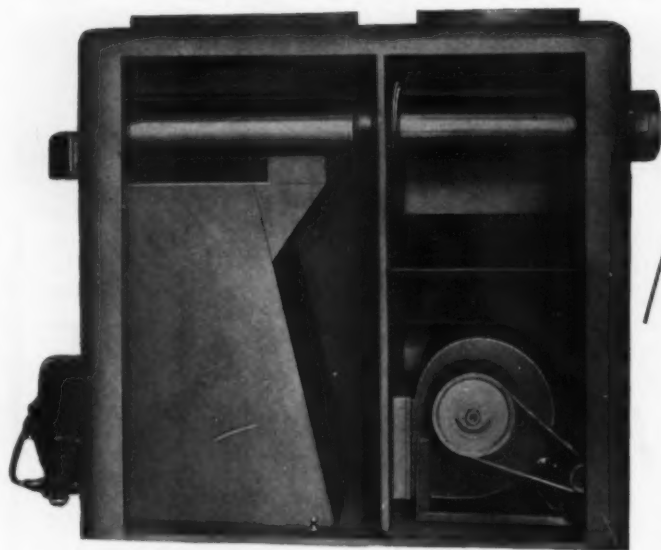
the midwest. In 1945 he became a vice president and in 1947 he was named manager of the controls division. In his new position, he will handle sales contact for the corporation at the executive level and will act as Perfex representative in various association activities.

Mr. Black, a graduate of Ohio University in 1926 was first employed as a research chemist for the Frigidaire Division of General Motors, where he made some of the earliest installations using Freon-12 refrigerant. From 1935 until the Perfex appointment, he had been with Chrysler Corp., Airtemp Division, in various executive capacities.

THE WATERMAN WATERBURY Co., Minneapolis, Minnesota has issued a house organ to its dealers and sales organization. News about the Waterbury classes in merchandising is featured and other interesting items about the company and the industry are included. A survey of Waterbury heating units in operation revealed that there are over 100,000 homes using Waterbury equipment and this total, called Waterbury Town, is the big news on the cover of the paper.

THE PIONEER TOOL Co. of Racine, Wisconsin has sold the manufacturing and sales rights of the Saf-Way Ladder Bracket and Folda-Way Extension Bench to the Handi Equipment Company, 908 10th Street, Racine, who are now in full production on these improved brackets and expect to begin manufacturing the Folda-Way Bench shortly. W. G. Zacharias, manager of the Pioneer Tool Co., states his firm will continue the manufacture and distribution of sheet metal workers' tool specialties.

# For your "modern" home owners



MANUFACTURED BY  
**JACOB BRENNER CO.**  
FOND-DU LAC WISCONSIN

## THE "SILENT" STEEL WELD OIL BURNING Winter Air Conditioning Unit

It is pretty well conceded today that no home is REALLY modern unless it is heated by an up-to-date winter air-conditioning furnace. Illustrated here is just the unit for your discriminating clients who desire clean, carefree automatic winter air-conditioning. The "Silent" Oil Burning Furnace has been especially designed to provide the maximum amount of uniform heat quickly and economically. It features an unusually quiet blower unit with adjustable speed and capacity, and easily assembled combustion chamber and burner. Developed by years of engineering progress, the "Silent" offers the utmost in heating comfort.

Please write today for more information.  
275-gallon, 14-gauge fuel oil tanks  
available with units.



TTTT  
BARBER  
COLMAN  
TTTT



Illustrating use of individual "LS" LINE-O-FLO units set into exposed ducts in a large retail store and show room.

## line-o-flo

### CEILING OUTLETS

- Low pressure drop — Low noise level.
- Dimensionally coordinated for use with acoustical ceilings.
- High diffusion efficiency.
- Accurate performance data tables.
- Two models— "LS" standard and "LL" with M21118 Day-Brite light unit.



Illustration of continuous-strip "LL" LINE-O-FLO units with lights in the ceiling of a hotel dining room.

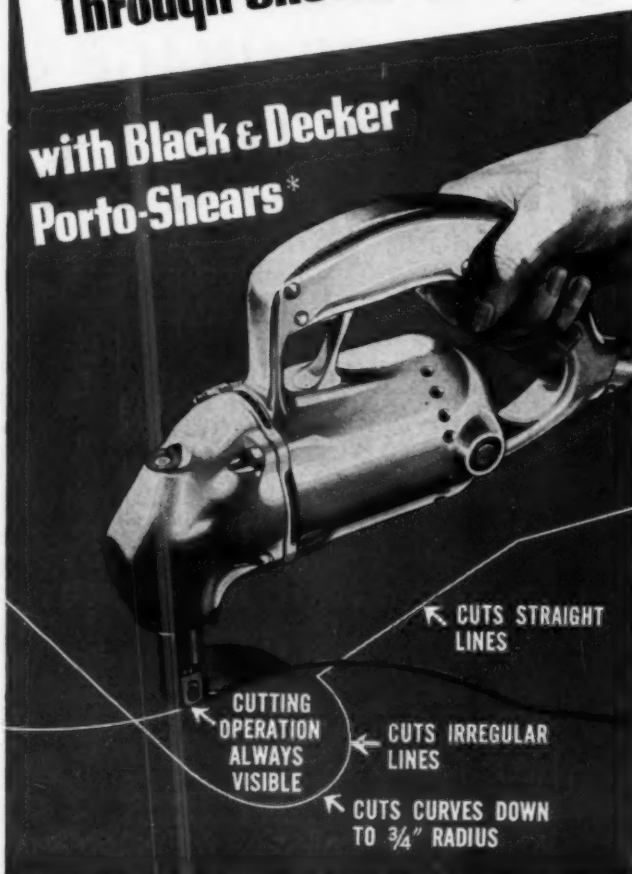
WRITE FOR  
LITERATURE

**BARBER-COLMAN COMPANY**  
1226 Rock St., ROCKFORD, ILLINOIS

## ZIP

### Through Sheet Metal Work

with Black & Decker  
Porto-Shears\*



Black & Decker Electric Porto-Shears cut sheet metal too tough for snips, speed up jobs where snips are slow. Fast, powerful shearing action eliminates hard muscular strain. New 12-gage unit has been developed to increase the range of the Porto-Shear line to heavier materials. Over-all design simplicity is retained with heavier construction necessary to shear 12-gage steel. Also shears about two gages thinner in Monel and stainless; 50% above rating in sheet copper, aluminum, lead, etc. Other models include 16- and 18-gage Porto-Shears.

For full information on Porto-Shears and many other speedy Electric Tools, see your nearby B&D Distributor. Write for free catalog to: The Black & Decker Mfg. Co., 682 Pennsylvania Ave., Towson 4, Maryland.

\*Trade Mark Reg. U. S. Pat. Off.

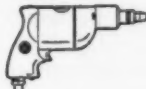
LEADING DISTRIBUTORS EVERYWHERE SELL

# Black & Decker

PORTABLE ELECTRIC TOOLS



ELECTRIC DRILLS



SCREW DRIVERS



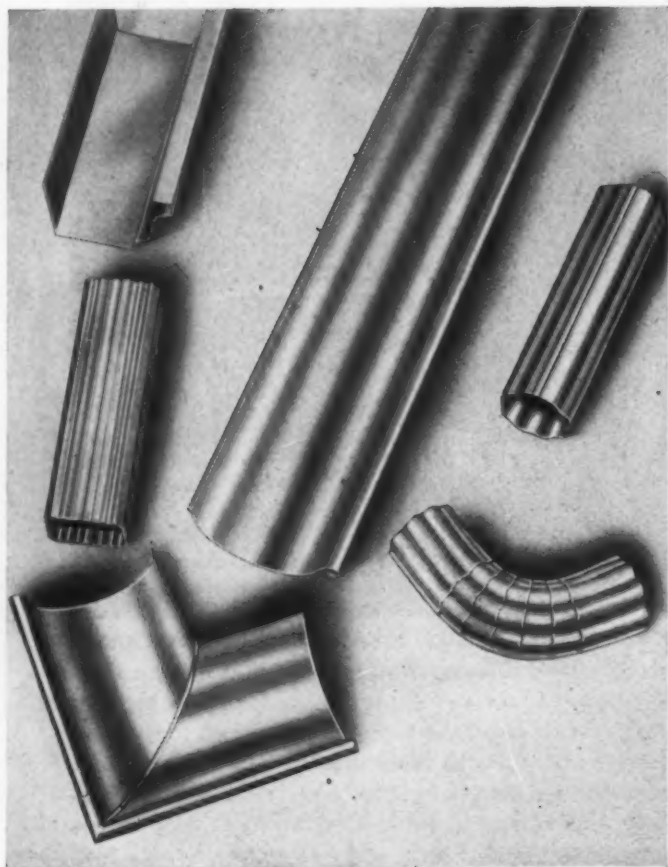
BENCH GRINDERS



WIRE BRUSHES

# STAINLESS STEEL

## ROOF DRAINAGE PRODUCTS



### Conductor Pipe • Fittings • Eaves Trough



Stainless Steel Pipe, Trough and Fittings combine to make the ideal Roof Drainage installation. Gutters resist sagging and abrasive wear due to the great strength and toughness of Stainless, and to Obdyke's correct design. Neutral finish is adaptable to any color scheme, will not stain adjacent surfaces, and may be painted if desired.



offers all standard sizes in Plain Round, Plain Square, Round Corrugated and Square Corrugated Conductor Pipe, and in Half Round and Style K Gutters, with all necessary accessories.

*Please write us today for more information.*

**BENJAMIN P. OBDYKE, Inc.**

445 N. 8th St.

Philadelphia, Pa.

## INDUSTRY ITEMS

AT A MEETING OF THE BOARD OF DIRECTORS of Benjamin Wolff and Co. Chicago and Milwaukee warehouse distributors of industrial metals, the following changes were made in top executive personnel:

Burton S. Wolff was elected president and treasurer of the firm. Mr. Wolff has served as vice president since 1927.

The former assistant to the vice president, C. D. Engstrom, was named vice president in charge of operations. He has been with the Wolff organization since 1937.

Jack May, who started with the company as a salesman in 1936, was made vice president in charge of sales. Mr. May's previous position was manager of sales.

Other executive changes include the election of M. W. Young to secretary and Seymour Oseas to assistant treasurer and assistant secretary.

INLAND STEEL PRODUCTS Co. (formerly Milcor Steel Co.) has announced the appointment of three sales representatives for the new St. Louis branch of the company. These men and their respective territories are: Mr. Howard Cross, southern Illinois; Mr. Robert Ladewig, south St. Louis; Mr. Larry Sitton, north St. Louis.



Howard Cross

Robert Ladewig

Larry Sitton

Mr. Cross joined the Inland Steel Products Company in September, 1948. He has had long experience with the type of sheet metal building products, heating and ventilating materials and raincarrying and roofing equipment produced by the company.

Mr. Ladewig served in the Air Corps during the war. He joined Inland in 1947 and received extensive training in the manufacturing and sales division of the Milwaukee plant before his transfer to the St. Louis branch in October, 1948.

Mr. Sitton is a native of St. Louis. He worked for a roofing concern prior to the war, served in the army for five years and then worked as assistant buyer in a large retail store. He joined the company in 1948 and, after a period of training in the warehouse and office, was assigned to the north St. Louis area.

The St. Louis branch was established in the fall of 1948. John E. Meroney, Milcor representative in the territory for many years, is the branch manager.

AMERICAN ARTISAN, March, 1949

# A

# LET *Atlas* BE YOUR T CASING DEPARTMENT

Send Your Furnace Specifications  
for Cost Estimates to:

*Atlas*

MANUFACTURING  
COMPANY

Eustis at Robbins St. Saint Paul 4, Minn.

# L

With Atlas cabinets you will insure that your units will have real modern beauty . . . you will lessen the selling load for your dealers. No bolts or screws on Atlas cabinets mean no wasted hours in the assembling process.

# A

Let Atlas supplement your present cabinet department—or do the entire job. Atlas cabinets sell themselves and the units they enhance.

# S

"We cover your unit  
with sales appeal"

## IT'S NEW *IT'S NEWS* the 100,000 BTU

### *Norman Southerner*

#### HORIZONTALLY DESIGNED FORCED AIR GAS FURNACE

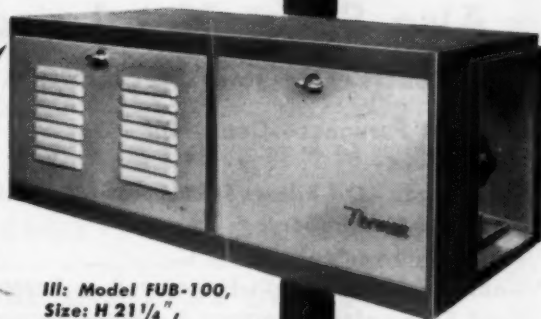
The introduction of this new improved large capacity model meets the demand from builders, contractors and dealers for a complete line of Norman Southerner horizontally designed gas furnaces.

The revolutionary Southerner line now meets the heating requirements of 90% of the entire home market. It can be installed in the attic or closet, under the floor, ceiling or stairs, on service porch or any other small space.

You can specify and install the Norman Southerner with complete confidence. It was selected to heat the first Revere Quality House . . . and has been proven in performance in thousands of installations. Meets all safety requirements of AGA for attic, under floor, closet or service porch installation. Approved by FHA. Now available in 30,000, 60,000, 80,000 and 100,000 BTU in both furnace and unit heater models. Burns natural, mixed, manufactured or LP gas.

101 applications of this Norman Southerner offer new advantages and savings to you. Send for complete details now. Mail the coupon today.

**ATTRACTIVE DISTRIBUTOR AND  
DEALER TERRITORIES AVAILABLE**



Ill: Model FUB-100,  
Size: H 21 1/4",  
W 23", L 52"

For Low Cost Conversion To Automatic Heat, Get The Facts On Norman Gas And Gas-Oil Conversion Burners

NORMAN PRODUCTS CO., Dept. 21  
1148 Chesapeake Ave., Columbus 12, Ohio

Please send complete details and information on the Norman Southerner and its 101 applications to the new construction and replacement heating market.

NAME .....

COMPANY .....

ADDRESS .....



# We Ship



## Everywhere in the U. S. A.

Sheet Metal Contractors from Coast to Coast depend upon Chicago Metal Mfg. Co.'s *Rolled-Rite Steel Angle Rings* for quick, tight sheet metal pipe assemblies.

Regardless of whether you are installing an exhaust, fume disposal, dust collecting or ventilating system, you can save time and effort and do a better job with *Rolled-Rite Steel Angle Rings*. They are accurate in every dimension, uniform in curvature and free from distortion. Available in 6" to 36" diameters, larger sizes rolled to order.

Write or telephone for list of sizes and net price list.

### Also Sheet Metal and Heating Supplies

- \* Moncrief Furnaces—Coal - Oil - Gas
- \* Oil Burners
- \* Oil Gauges - Oil Filters - Automatic Oil Lifters
- \* Blowers - Humidifiers
- \* Master Blowertrol - C. A. C.
- \* Controls—Minneapolis-Honeywell - Sampsel
- \* Field Barometric Dampers & Safety Furnace Controls
- \* Western Turbine Ventilators
- \* Accurate Ventilators
- \* Conductor Elbows - Miters - Etc.
- \* Sheet Copper Cold and Soft Rolled
- \* Blow Pipe Ells - Blast Gates
- \* Registers—U. S. and Minneapolis-Honeywell

Complete Catalog on Request.

### CHICAGO METAL MFG. CO.

3733 S. ROCKWELL STREET, CHICAGO 32, ILLINOIS

### NHWA Meeting —

(From page 113)

fied stocks to adequately serve their trading areas. The wholesaler has no control over his margin of profit which has remained fixed during this period of improvement and expansion. He suggested that manufacturers and wholesalers should equitably solve their mutual problems.

Norman Medvin, publisher of a trade letter serving the heating industry, said he could not recall a year in which there had been so much questioning about the future as there has been this year.

There is talk of building materials leveling out this year or of their taking a downward turn. There is talk of a decline in housing. These vital questions, he said, are disturbing and rightly so.

Although the downturn started, in his opinion, in 1948, wholesalers enjoyed a 12 per cent gain in dollar volume over 1947. He said his audience should recognize that the Dewey-Warren ticket was a combination that was sympathetic to business and that the candidates' business philosophy could be characterized by the statement that they were interested in less government business—not more. He believes that the reverse is true under the present administration. As examples, Mr. Medvin anticipated the President's taking an active part in the allocation and low cost housing programs.

Joseph E. Conway, labor relations consultant, explained practical applications of the Taft-Hartley Act and presented an informative discussion on the advantages of a proper attitude toward labor relations problems.

### Forum Arouses Interest

A series of discussions Tuesday afternoon held the attention of the wholesalers throughout the session. Speakers included Charles E. Price, manager of AMERICAN ARTISAN, who summarized statistics of a survey which indicate the trends of distribution in the warm air heating and sheet metal field.

T. W. Stevens, Tiffin Art Metal Company, demonstrated on a blackboard how his company analyzed its delivery problems in a compact, densely populated territory. The analysis took into consideration the size and number of the communities and the trucking companies and railroads serving the area. It was found that 610 towns of 250 population or more were within 48 hours by common carrier from the company's warehouse. This represented 65 per cent of the towns. Ninety-two per cent of the towns were within 72 hours delivery time.

A. E. Bartley of the Anchor Sanitary Company and Carl E. Anderson of the Leighton Supply Company concluded the afternoon program. Mr. Bartley displayed a promotional and advertising program his company has developed for dealers and Mr. Carlson sounded a note of optimism befitting to his subject, "Summation and Inspiration."

During the evening banquet, retiring President Johnson presented to Edwin A. Scott, publisher of *Sheet Metal Worker*, a scroll of recognition for his service to the industry.

# NOW AVAILABLE

A complete reprint, under one cover, of  
Professor S. Konzo's invaluable series  
of articles —

## The "HOW, WHAT AND WHY" of the New Winter Air Conditioning Manual

Everyone who is now using or expects to use the new "Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems" will find Professor Konzo's series a source of much practical help in understanding the Code and correctly applying it to actual jobs. In this great series, Professor Konzo not only explains step by step exactly how to use the Code, but, in addition, tells in detail of the research and experience that is behind each step in the suggested procedures.

Price — Only \$1.00 per copy

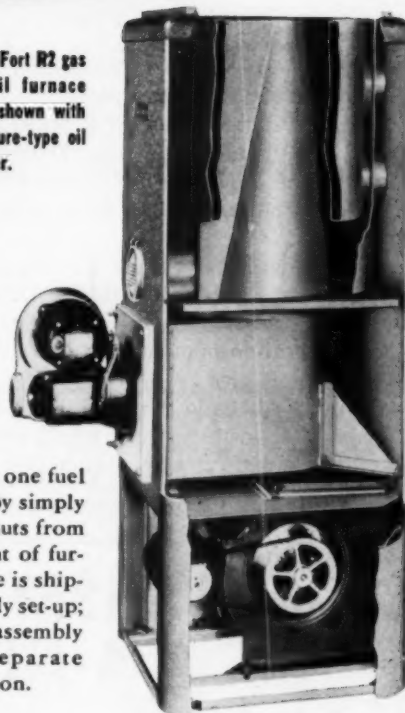
### AMERICAN ARTISAN

6 NORTH MICHIGAN AVE.

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— HEATING EQUIPMENT JOBBER ☐

CREATION OF A MARKETING DIVISION to consolidate all sales, advertising and promotional activities of The Coleman Company, Inc., was recently announced by Sheldon Coleman, executive vice president and general manager of the manufacturing firm.

R. W. Carney, for many years an officer of the firm and its sales manager, will head the new division with the title of vice president in charge of marketing.

Reporting to him are C. L. Burrows, recently appointed national sales manager; A. W. Boyer, advertising manager; and C. B. Corbin, market research manager.

## Air Distribution—

(Continued from page 90)

construction is an elbow with vanes, which direct the flow of air evenly over the grille face.

A throat damper directly behind a grille is another example of an impediment to air flow. Dampers should not be placed in the approach but in the branch duct in the basement or some distance away from the supply outlet.

Simply placing supply air outlets on inside walls 7 ft above the floor and discharging to the outside walls does not solve all air distribution problems. In a living room where large windows or outside doors sometimes extend to the floor, it may be necessary to supplement the sidewall supply with additional air at the sill or an overfloor supply as shown in Figs. 4 and 5. Velocities from such outlets should not be higher than 250 fpm.

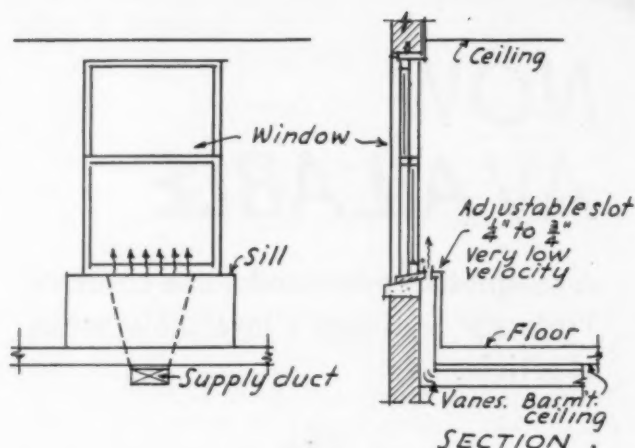
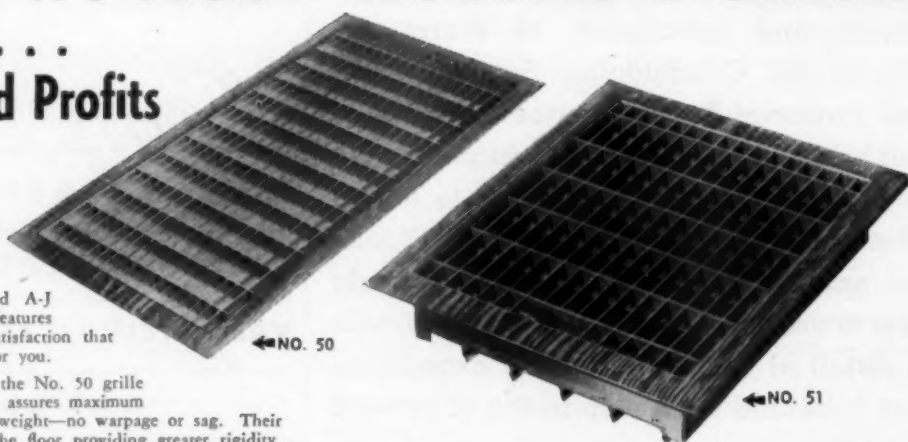


Fig. 5

Grilles located in these areas will temper the cold air which normally descends the windows and rolls across the floor. This prevents cold floors and cold feet.

The return intakes should be placed on the side walls in the baseboard and never directly in the floor where they may become clogged with dirt and dust. Return intakes should be located in the coolest areas on outside walls and velocities should not exceed 400 fpm. It is good practice to install one in each room as this will keep air motion within the proper range. One return for the entire first floor area does not meet comfort requirements as air motion in all rooms will be excessive, especially in areas adjacent to the return

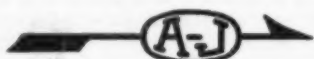
# SELL and SATISFY with A-J FLOOR REGISTERS & GRILLES FIRST for ... Performance and Profits



Sturdily constructed, smoothly finished A-J floor registers and grilles have the features that provide the complete customer satisfaction that results in increased sales and profits for you.

The steel, notched-bar construction of the No. 50 grille and No. 51 register (illustrated above) assures maximum strength and durability with moderate weight—no warpage or sag. Their beveled edges bring them flush with the floor providing greater rigidity, closer fit, and neater appearance. The  $9/16'' \times 1 \frac{15}{16}''$  openings provide a close mesh even spike heels can't catch in.

Available in natural oak finish, or a variety of other finishes. Sizes to fit any duct opening. A-J floor registers and grilles are designed to look better, last longer, and give better results. See your jobber, or write today for the complete, FREE A-J Catalog.



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# TJERNLUND QUICK HEAT

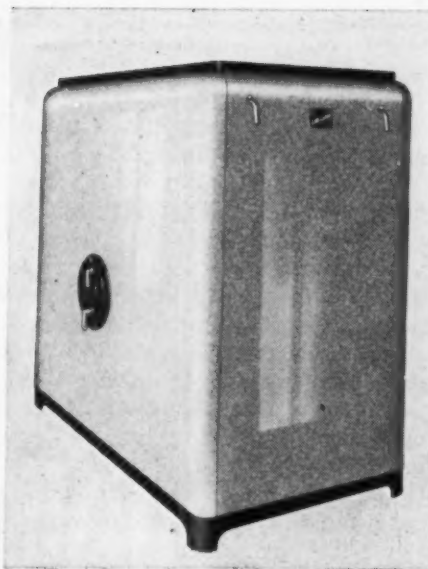
## DOMESTIC AND INDUSTRIAL HEATING UNITS

EASIER SALES AND  
MORE SATISFIED  
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The variety of models to suit practically every heating purpose makes QUICK HEAT a recognized profit builder for warm air heating dealers. Practical application of sound engineering principles combined with extensive experience has produced this highly recognized line of superior equipment. Performance and convenience of these units proves business building quality to dealers handling this line.

**Overhead Units For  
Ceiling or Wall Mounts**

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WRITE FOR  
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LITERATURE



### READY FOR INSTALLATION

Floor units are mounted on legs to prevent rusting of bottoms and eliminate air leaks. Factory assembled in attractive casing with new type heat saver and specially designed gun type oil burner. Convenient and quick installation.

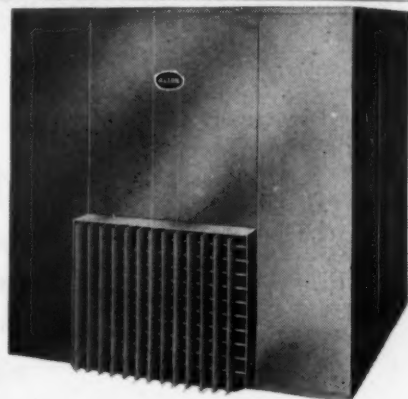
**TJERNLUND MFG. CO.**  
2140 Kasota Ave. St. Paul 8, Minn.

*Owners  
acclaim*  
**ALTON**



## EVAPORATIVE COOLERS

(Formerly named AIR-CHAMP)



### *Alton Advantages*

1. All galvanized steel cabinet.
2. Turbospray—eliminates pump trouble.
3. Two sets of mats—stops water "pull-through."
4. Air washer sections—contains all water.
5. Heavy duty Squirrel Cage Blower.
6. Fibreglas Mats... optional.

Yes, selling the Alton is like selling satisfaction to your customers. You'll find out why when you send for Alton's new illustrated folder, "The Alton: The Evaporative Cooler for the 1949 Market!"—yours, for sending in the coupon below.

You'll learn that the Alton is not just ANOTHER evaporative cooler. Unique features like the "double mat arrangement" that pre-

vents "water pull-through," the enlarged Turbospray Water Assembly keeps Alton miles ahead of the competition. Handsome styling of the all-galvanized steel cabinet helps you sell from the moment it meets the prospect's eye.

Don't delay, write for the complete information given in "The Alton: The Evaporative Cooler for the 1949 Market."



Please send complete information  
about the new Alton.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

**write today**

intake. A two story dwelling should be treated in the same manner, except in small dwellings one return intake for the second floor may be located in some central location, usually in an upstairs hallway. Under no circumstances should the second floor return intake be omitted. This latter would allow the return air to flow down the stairway to the first floor causing drafts and discomfort.

Many books and articles have been written about warm air heating for homes but we continue to have complaints about drafts in every community. The one chief reason for this is the lack of knowledge on the subject. Contributing to this is the fact that new personnel is always entering the field and it becomes necessary for them to become acquainted with the problems of air distribution.

The majority of the complaints about winter air conditioning systems come from improper air distribution. Its importance cannot be overestimated. It should be the aim of every heating engineer and others in the field to spend sufficient time on each job to work out the best air distribution for that particular job. Proper air distribution and proper air motion is an element of comfort that is demanded today. Therefore, in order to provide proper air distribution, it is necessary to take the following points into consideration:

1. Design the system according to required comfort conditions
2. Calculate the heat losses accurately
3. Calculate the amount and the correct temperature of the air to be supplied

4. Select the proper type and size of supply outlets and return intakes and place them in the proper locations

Care and judgment must be used in selecting and placing grilles, for this is most important for a properly functioning system. Unless we who are in this business provide a high quality of comfort, other forms of residential heating may become readily accepted.

### Washington Letter—

(From page 71)

polite substitute for gifts. Those grants are simply vast sums we give away and never even plan to claim again. For instance the \$1,500,000,000 for slum clearance includes a half billion in grants. The housing is to be constructed over the 7 year period at the rate of 150,000 units annually, unless the President feels more units are required. He may then order the annual total to be increased as much as 100,000 units. The municipality which benefits contributes nothing, but must fix taxes at 5 per cent of the rental income of the project. The cost may go as high as \$2,500 per room in the United States, and \$3,250 in Alaska, providing the controlling Public Housing Authority finds it is not feasible to construct the units at the statutory \$1,750 per room, or \$2,500 in Alaska. An eligible tenant cannot have a net family income in excess of five times the rent, including utilities, with an exemption of \$100 for each minor in the family. It has been pointed out

# NATIONAL OIL HEAT EXPOSITION

MECHANICS' HALL • BOSTON • MAY 16 THRU 20, 1949

IN CONJUNCTION WITH 26TH ANNUAL CONVENTION OF OIL-HEAT INSTITUTE OF AMERICA



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May 20—Architects' and Engineering Day

Make your Hotel Reservations NOW by writing Boston Chamber of Commerce, Housing Bureau, 80 Federal Street, Boston 10.

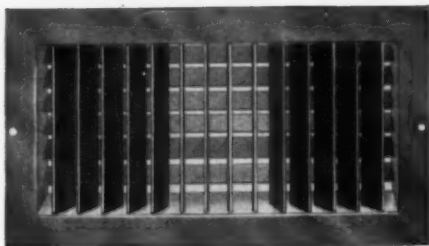
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# YOU CAN GET IT QUICKER FROM **STEWART**

—and specify from  
a larger selection!

FOR EXAMPLE . . . HERE'S ONE . . .  
**ALL-WAY SELECTIVE AIR THROW**

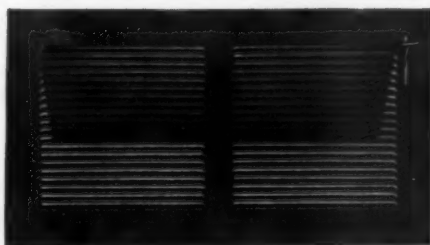
*Style*  
DDV



- Vertical face fins — Horizontal rear fins
- All bars individually adjustable
- Engineered — for beauty and strength
- Available in over 100 sizes
- Fitted with sturdy rubber gasket
- Zinc chromate prime coat

. . . AND ANOTHER . . .

**LEVER-OPERATED SINGLE DAMPER  
WALL REGISTER**



*Style*  
91

- Horizontal face bars down deflecting
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- Face bar setting key furnished
- Damper lever frictionized for high velocity
- Made in all standard residential sizes
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New Catalog Shows 54 Styles with Prices and Specifications  
REGISTERS . . . GRILLES . . . SCOOPS

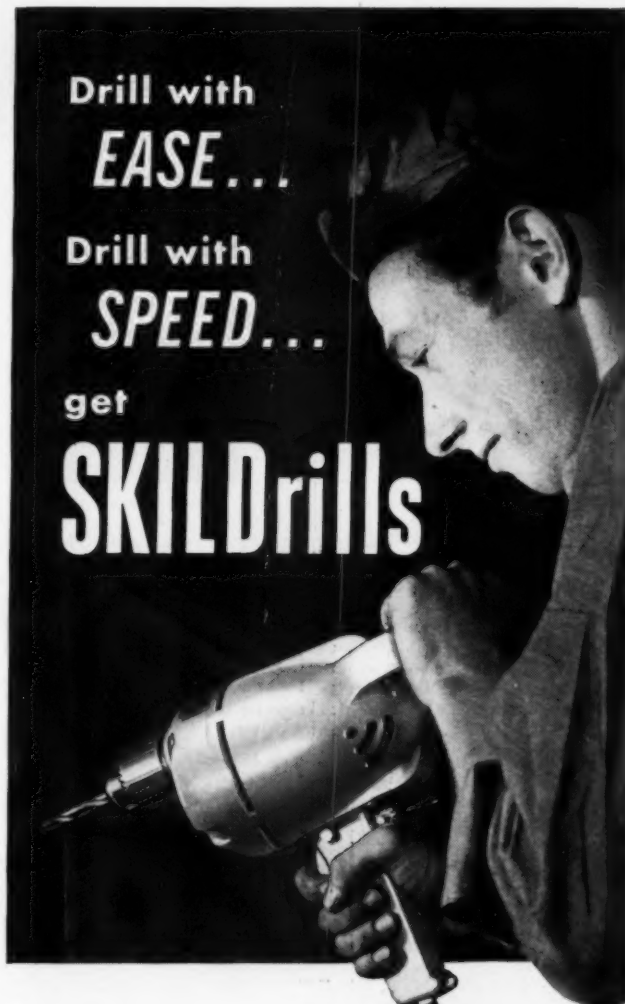


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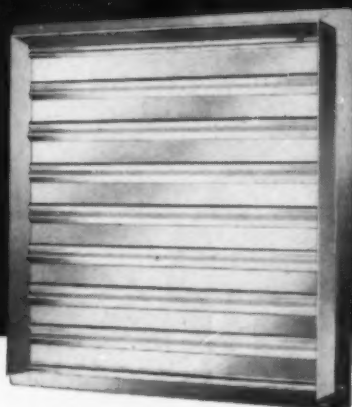
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they all  
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THE  
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SHUTTER  
WITH ALL THE  
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## IT TAKES THE LOAD OFF THE FAN!

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MORE AND MORE STOKER CUSTOMERS  
FOR ME. I HAVE FOUND ECON-O-COL  
STOKERS MEAN FASTER SALES  
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## ECON-O-COL

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WRITE FOR DETAILS OF  
THIS COMPLETE LINE OF  
PRECISION-BUILT, HIGHEST-  
QUALITY STOKERS

that the annual contribution of \$475,000,000 from the Federal Treasury means it will cost 10,000,000 families of the United States who pay taxes an annual contribution of \$37 per month to each of the renters who occupy the 1,050,000 housing units to be built. This contribution is equal to half the rental charged all families in the United States who rent their housing, i.e., \$5,500,000,000 per year. Put in another way, this means that each taxpaying family pays \$3.70 per month towards the rent of each of the families who occupy the 1,050,000 public housing units; and it means each taxpaying family contributes this bit towards the monthly rental for 40 years, or makes the contribution during the 40 years at the rate of \$44.50 per year per taxpaying family, which totals an aggregate of \$17,000 per taxpaying family. We have been told in connection with the public housing legislation that there are now only 168,000 public housing units in existence, as contrasted with the 1,050,000 units which this legislation is to bring into being.

## Plan Housing Research

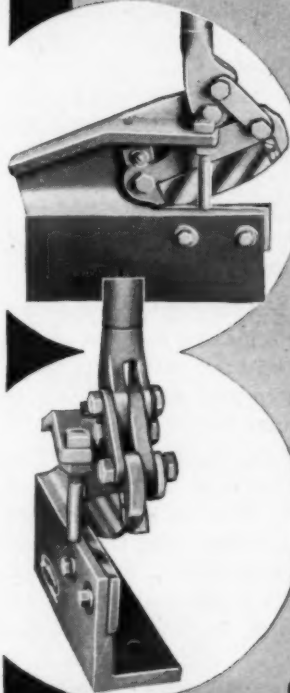
The bill provides an unlimited appropriation to conduct research in all housing fields. There is no doubt that the combined Chamber of Commerce-Federal Government research program discussed earlier in this letter is expected to benefit by this taxpayers' bounty. But it may be expected that Mr. Foley's HHFA will undoubtedly do what it can to put the brakes on any effort to use much of these funds for anything but purely government undertakings. The opposition charges the public housing program will lead to more ruinous taxation; that it is merely the precursor for a much more extensive public housing adventure; that it does not provide housing for those who most need it: the lowest income groups; that it does not really clear the slums; that it is highly inflationary; becomes an autonomous unit of government which would be independent of Congress; creates a largely magnified central bureaucracy in Washington, D.C. with controls over local community functions throughout the nation; makes local and national pork barrels; and will inevitably lead to a complete and absolute Socialism.

## Bill May Succeed

Those who know their Washington are convinced the bill will become law as outlined. There is, however, a very strong belief that the Administration will not ride roughshod over strong public prejudice to enforce the law in meticulous detail. It is assumed its existence will be used to bludgeon private building and construction enterprise to do what the law is apparently intended to accomplish. In other words, it will be another of those standby reserve powers of the White House. As a matter of very interesting fact you get the idea here that many of these sharply socialistic laws are not designed for immediate enforcement but are made to persuade private industry and private interests to do those things for the common welfare which Mr. Truman and his associates have discussed during the campaign, and before the recent campaign. In other words they hope to attain some of the objectives of the Social Welfare State—the phrase was coined by Supreme Court Justice Douglas—by shoul-

# BEVERLY

## Slitting SHEAR



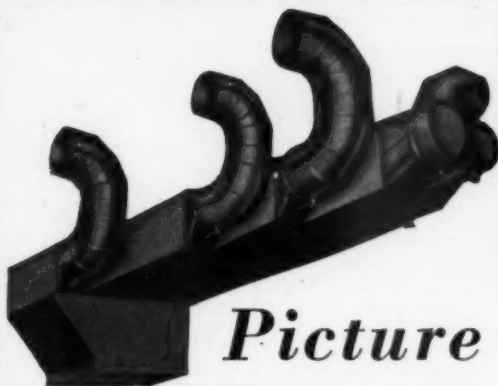
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**"Made-Rite" Co., Inc.**

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AMERICAN ARTISAN, March, 1949

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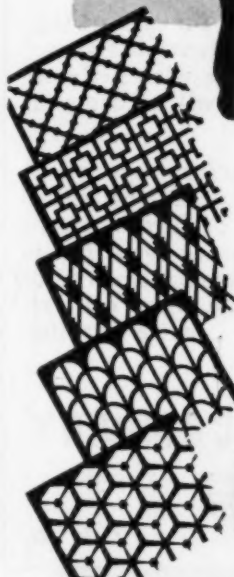
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Automatic  
**REZNOR**  
gas fired unit heaters



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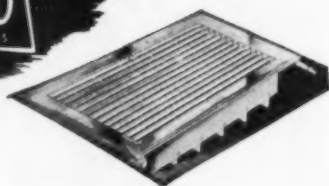
Ohio



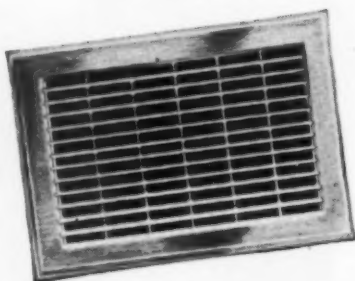
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dering and edging the opponents into performance. They realize the country is not quite ready to swallow Socialism—or the modifications of the offered Socialism—hook, line and sinker, but they also know the country wants many of the glittering benefits promised by Socialism. The idea therefore appears to be to secure performance of the promises made during the campaign by indirect threat of the legislation which either has been enacted, or which might be enacted.

## Temperature Distribution—

(From page 94)

lated in the test bungalow to eliminate excessive changing of partitions. The circulating fan was of the propeller type. It was mounted in a vertical position under the heat-transfer element and was used to circulate the air through the heater and the house.

Cold air return ducts under the floor connected the furnace casing to a floor register near an outside wall in each room except the bath. The ducts serving the two bedrooms were 9 in. in diameter while those serving the living room and kitchen were 12 in. in diameter. The furnace was automatically controlled by a room thermostat and a bonnet switch in the conventional way.

Fig. 8 shows the manner in which the cold air returns were connected to the furnace casing.

The results obtained on this heating device are summarized in table 11.

TABLE 11.—Temperature distribution in a test bungalow heated by gas fired floor furnace located in hallway with air distributed by fan inside furnace casing and with connected returns under the floor

Height above Floor	Kitchen	Living room	North bedroom	South bedroom	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 35 F)							
2 in.	62	62	65	64	62	63	3
30	67	68	70	69	69	69	3
60	69	71	72	71	71	71	3
78	69	71	72	72	72	71	3
94	70	73	73	72	71	72	3
Basement	...	...	...	...	...	55	...
Attic	...	...	...	...	...	47	...
Temperature Difference							
2 to 60	7	9	7	7	9	8	...
2 to 94	8	11	8	8	9	9	...
Room Temperature (Outside Temperature 46 F)							
2	63	65	65	65	62	64	3
30	67	69	70	71	68	69	4
60	69	71	71	72	70	71	3
78	69	72	72	72	70	71	3
94	70	73	72	72	70	71	3
Basement	...	...	...	...	...	56	...
Attic	...	...	...	...	...	52	...
Temperature Difference							
2 to 60	6	6	6	7	8	7	...
2 to 94	7	8	7	7	8	7	...



**GET YOUR FOOT IN THE DOOR**

GET THOSE  
HEATING PLANT REPAIRS  
NEW INSTALLATIONS



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GRAND RAPIDS FURNACE CLEANER**



Yes, here's your "in" to increased business and profits! The famous Grand Rapids Furnace Cleaner not only gets you into the customers basement but gives you an excellent opportunity to check over each heating plant as it is cleaned.

The Grand Rapids Furnace Cleaner puts you right where you can naturally recommend and sell necessary repair work and new installations.

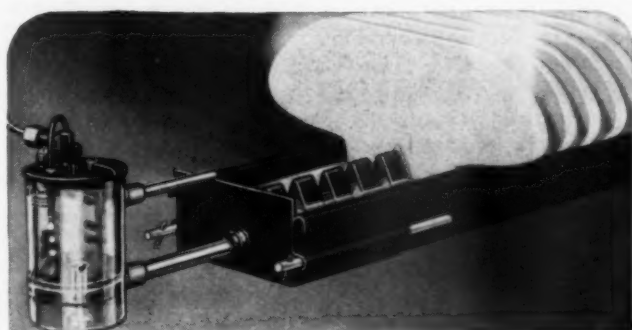
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Grand Rapids 7, Michigan



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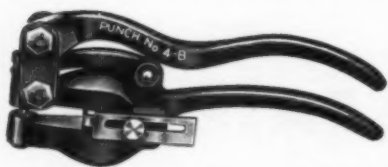
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This punch is accepted by leading contractors and dealers as a real time-saver in the shop and on the job. Men who use it every day know it can't be beat for clean, fast punching. Has a capacity of  $\frac{1}{4}$ " through 16 ga., weight 3 pounds,  $8\frac{1}{2}$ " in length, depth of throat, 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key.



## POWERFUL Turbo-Ventilation but no power cost!



### SPECIFY *Western* ROTARY TURBINE VENTILATORS!

- LIFETIME GUARANTEED ball bearings.
- 2 M. P. H. BREEZE keeps Western Turbines in operation. Constant 24 hour exhaust.
- ALL SIZES from 6" to 48" throat. Both bearings on same axis always stay in alignment—save trouble and delay from shipping jolts.

Write for complete catalog on all of Western's modern, carefully engineered ventilation equipment.

PLEASE MENTION AMERICAN ARTISAN

**JOBBER'S**  
Became part of  
our national  
distribution  
system. Details  
on request.

"Always on the job—never on the payroll"

## WESTERN ENGINEERING & MFG. CO.

1726-28 E. WASHINGTON BLVD., LOS ANGELES 21, CALIF.

## Overtime on Overtime —

(From page 78)

fore 8 A.M., may such extra compensation be credited toward statutory overtime?

A. Yes, where by contract or practice the work day begins at 8 A.M. and continues until 8 A.M. the following day.

4.

Q. If the Agreement provides for a regular day from 8 A.M. to 4 P.M. with a double time rate for work performed after 4 P.M., may employees, who have worked a part of the regular daily hours only because of inclement weather for instance, and then work beyond 4 o'clock, have their double time for hours after 4 o'clock credited against statutory overtime?

A. Yes, because, in fact, there is a contract scheme and a customary practice for bona fide regular time hours and overtime hours and it is immaterial whether in other instances the full daily hours provided for in the contract are worked. If, however, the contract arrangement is consistently disregarded so that it appears that the practice is regularly inconsistent with the contract terms, then a question would be raised as to whether the plan was merely an arbitrary division of the work day into straight time and overtime in order to obtain credit for premium pay which was, in fact, not overtime hours but for work at a particular time of the day.

5.

Q. Where the contract provides for a seven hour day and a thirty-five hour week with overtime pay beyond those periods, may the contract overtime rate for the eighth hour and subsequent daily hours be credited against statutory overtime?

A. Yes.

6.

Q. Does it make any difference in the above illustration whether the basic day schedule is six hours instead of seven with overtime beginning with the seventh hour?

A. No. There is still a bona fide basic work day.

7.

Q. In the above example suppose that because of a heavy work load, seven or eight hours are regularly worked?

A. No. They are still bona fide overtime hours and may be credited against statutory overtime.

### Legislation

There is, we think, reasonably good prospect that there will be legislation to modify or wipe away the decisions of the Supreme Court which have so materially affected collective bargaining upon overtime and premium time. Once before, in the case of the portal to portal decision, Congress followed the decision with legislation to destroy its effect. We cannot be sure that it will happen again, but there is a growing sentiment that there must be corrective legislation in this field. In the meantime, the only safe plan is to attempt to comply with the law as it stands and with the above guidance by the Administrator.

In an attempt to be specific we suggest the following by way of summary:

### SUMMARY

#### Coverage

1. Building contractors, as such, are not exempt from

## TEAM 'EM UP FOR MORE SALES!



Sell Him A  
**Majestic**  
INDOOR INCINERATOR  
When He Buys  
A New Furnace

HE'S in a buying mood when he selects a new furnace, so "keep the ball rolling"—sell him a Majestic Indoor Incinerator at the same time! If Mr. Buyer purchases an automatically fired furnace, explain to him that burning refuse in such a unit is now impossible. Then tell him how this indoor incinerator can do a much better job, burning all waste paper, trash and garbage right in his basement. It's a convenience for his wife to have a Majestic Indoor Incinerator handy—eliminating trips to the outdoor garbage can and trash burner in all kinds of weather. Here's an item that is *completely* safe—just fill it, light it and leave it. Unique down-draft does the rest! Connects to furnace flue. Duotone finish. 24" diameter; 32" high (other sizes available). Priced right for quick sales! Get the facts—write today.

The **Majestic** Company

110-A ERIE ST. • HUNTINGTON, INDIANA

Nationally Known and Advertised for Over 40 Years!



## "Run Down" Heating Plants Need Your Help Now

Furnaces get "run down" in the Spring just like humans. Overworked during the winter months, they are clogged with soot and dirt at this time of year.

With a Super Red Streak Furnace Cleaner you can take those heating plants off the sick list and put them back into top condition. Also you make business for yourself and save your customers discomfort, inconvenience and expense by revealing need for repairs, replacements, new plants.

Easy to operate, the Super cleans 'em hot or cold. Chimneys, too from the bottom up. Try a Super for 5 days free and see what a nice profit you can make. Keep what you make even if you return the Super.



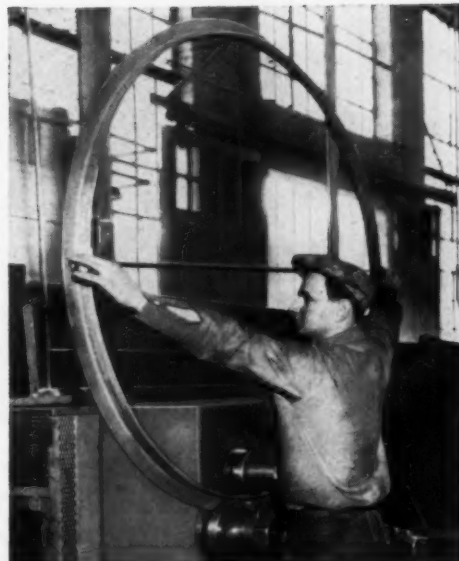
National Super Service Company, Inc.

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National Super Service Company of Canada

Toronto, Ont. Vancouver, B. C.

## Angle Rings



### TO YOUR SPECIFICATIONS

We specialize in rolling angles, tees, channels, bars and special shapes to fit your individual needs—with or without rivet or bolt holes.

Angle Rings are used for many purposes such as reinforcing tanks, joining pipe or smoke stacks, and installing air conditioning fans. Write for our list of standard sizes and discounts—also our new circular.

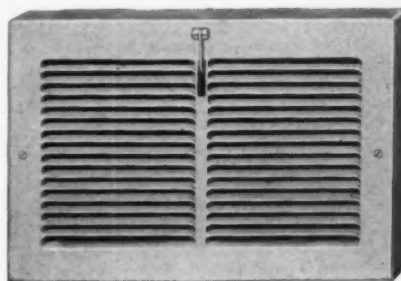
**NATIONAL METAL FABRICATORS**

2140 S. Sawyer Ave.

Chicago 23, Ill.

## SAVE \$\$\$

By Using →



For  
**SMALL  
HOMES  
&  
BUILDING  
PROJECTS**

Here's a single valve register with adjustable fins that combines quality and economy. See how you can save on air conditioning and gravity base registers. Ask your supplier or write.

## THE A & A REGISTER CO.

8327 Clinton Rd.

Cleveland, Ohio

GEO. G. AUER, Pres.





**for BETTER  
PRODUCTION and  
MAINTENANCE  
at Lower Cost**

A proved time-saver in any sized shop. Libert's *flexibility* gives you a wider variety of work—clean shearing of flat or formed sheet metal...straight or irregular shapes...inside or outside cuts. Libert *simplicity* means that even unskilled labor soon does accurate work, lots of it *and fast!* Write for Bulletin.

Made in sizes up to 60 in. throat, 10 gauge capacity

**LIBERT MACHINE CO., GREEN BAY, WIS.**

**Libert Hi-Speed SHEAR**

**THIS LABEL IS YOUR ASSURANCE  
OF THE BEST FURNACE PIPE AND  
ELBOWS OBTAINABLE.**



**THE BETTER DEALERS IN THE  
MID-WESTERN AND ROCKY MOUN-  
TAIN STATES INSIST UPON SUPE-  
RIOR FURNACE PIPE AND ELBOWS.  
MANUFACTURED ONLY BY—**

**SUPERIOR PRODUCTS CO.**

**606-10 South 14th St.,  
Omaha 2, Nebraska**

the law.

2. Many staff employees either in the home or branch offices of the contractor or at the site of construction are within the coverage of the law without regard to the nature of the work done by the contractor.

3. Certain mechanics and laborers of the contractor performing work in the repair, alteration or reconstruction of industrial or commercial buildings generally are within the coverage of the Act.

**"Overtime on Overtime"**

1. Change wherever possible all union agreements and practice so that the work week will begin on Monday with Saturday and Sunday falling at the end, and therefore creditable against statutory overtime.

2. Whenever in doubt either keep the hours to 40 or obtain a specific ruling before working employees beyond 40 hours a week.

**Indiana Convention —**

(From page 117)

durable material.

Thursday evening was devoted to the social gathering sponsored by the Fur-Mets, an organization of suppliers and salesmen. Turtle races were the order of the evening with the bets flying hot and fast. In fact the bets were faster than most of the turtles.

Friday morning the regular business meeting of the association took place and the reports of officers were first on the schedule. Since his full report was to be in the bulletin, Frank Anderson, Terre Haute, secretary, did not deliver it at the meeting but spoke briefly on the value of association work. William Garber then gave the treasurer's report as Homer Selch, treasurer of the association, was not present at the time. The report of the nominating committee was read to the membership and accepted.

**Human Engineering**

After the conclusion of the business session the first speaker of the morning was Harold L. Schuman, Indianapolis, of the Indiana Manufacturers Association. He spoke on "Human Engineering" and his main theme was that people are pretty much alike no matter what industry they happen to be working in. There are fundamental rules of human behavior that apply whether a man is a butcher or a sheet metal worker.

The speaker advocated a program of getting acquainted with the people who work for you in order to have a better idea of what skills and talents are available within the organization. Job security is important to most workers these days and any additional benefits that the employer can grant to the workers will tend to reduce turnover and increase efficiency.

Arnold Spencer, Indianapolis, of the Indiana Bell Telephone Co., was the last speaker of the morning and he dramatically gave the do's and don'ts of using the telephone. He brought out the importance of the telephone as a business aid, since many people get the first and often only impression of a business man through his telephone voice.

First speaker on the afternoon program was William (Bill) Ward of Ward Machinery Co., Chicago, and his speech was entitled "Modernizing for the Future." The message he brought was the dire need for greater

**New! famco**  
**Power SQUARING SHEARS**

**\$480<sup>00</sup>**  
(LESS MOTORIZATION)



**QUALITY FEATURED  
AT A NEW LOW PRICE**

- Saves equipment investment for departments and shops doing light work.
- Low initial cost . . . economical to operate.
- Sturdily built throughout . . . powerful gear drive. Cuts up to 18 gauge mild steel.
- Has non-repeat mechanism, easily set for continuous operation.
- Inlaid, precision-ground high carbon tool steel blades regularly furnished. High speed blades available at additional cost.
- Adjustable front and back gauges, hold-down, and guard furnished.
- Three sizes . . . 36", 42" and 52" cutting widths.

This new Power Shears is the latest addition to the Famco Line of cost cutting machines, intended to meet the growing demand for lightweight, low-cost power machinery. For information about the complete Famco Line, write to—

FAMCO MACHINE CO. • 1314 - 18th St., Racine, Wis.

**famco** **COST CUTTING** **machines**

ARBOR PRESSES • FOOT PRESSES • POWER PRESSES  
FOOT SQUARING SHEARS • POWER SQUARING SHEARS

★ ★ ★  
**NEW EQUIPMENT** *means*  
**BETTER ELBOWS** *for you*  
**CINTI ELBOWS**

There's an old saying about a chain and its weakest link that might apply just as well to elbows. You just can't erect a perfect sheet metal downspout job unless the finest elbows are used.

The Cincinnati Elbow Co., with its new automatic equipment and elbows hot-dipped after forming makes this possible.

Use the new Cinti Elbow and rest assured of a job well done.

*Ask Your Jobber for Them*

**The Cincinnati Elbow Co.**  
2627 Colerain Avenue  
Cincinnati 14, Ohio



TIME SWITCHES •  
Synchronous Self-Starting Motors  
RELAYS • Open or  
Can Type

**TIME SWITCHES...  
...RELAYS**

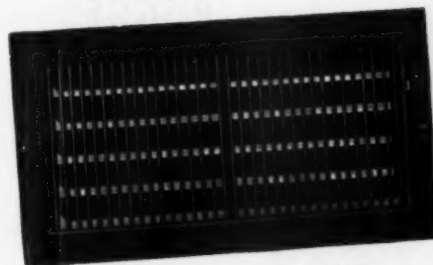
For any load, for every installation, Automatic precision products meet the most rigid specifications.

WRITE *Today* FOR CATALOG  
In SWITCHES, FLASHERS and RELAYS  
where dependable performance is  
paramount, look for the  
DIAMOND SEAL for  
DIAMOND QUALITY.

**AEMCO**  
**Automatic Electric MFG. CO.**  
52 STATE STREET • MANKATO, MINN.



**AIR-VANE  
FORCED AIR REGISTERS**



No. 802 AIR-VANE Forced Air Register

Made By  
**ROCK ISLAND**  
... You Know  
They're Good!

Quality of equipment is essential to the performance and life of any modern forced warm air heating installation. You'll find that Rock Island's AIR-VANE Line will fill the bill for you on the most exacting jobs. They're constructed with vertical or horizontal vanes for right or left or downward deflection of air flow. Multi louvre dampers for closing and 15 degrees downward directional air flow are standard. This versatile model is also available with single louvre in wall or baseboard registers. Check the complete Rock Island line . . . if it's a Rock Island Register you KNOW it's good.

**ROCK ISLAND REGISTER CO.**  
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## PIPE AND FITTINGS GUARANTEED QUALITY!

All Ajax fittings are made of high-grade, full gauge sheets . . . no seconds used! Quality is fully guaranteed. Your order, large or small, receives prompt, personal attention.

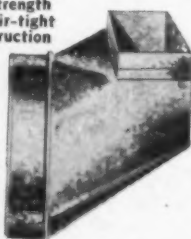
For help on your heating problems our engineering department is at your service. Contact us . . . we'll gladly work with you.

Write for catalog of Furnace Fittings.



Scientifically designed to reduce air friction

Double seamed for strength and air-tight construction



**Ajax Furnace Fitting Co.**

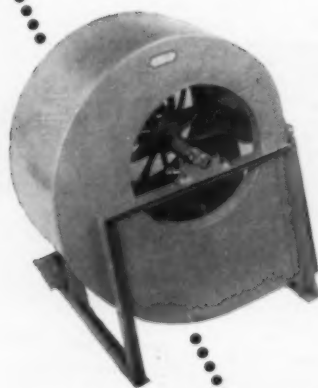
Division of  
The Cincinnati Sheet Metal & Roofing Co.  
216-20 E. FRONT ST. CINCINNATI, OHIO

## UNIPACK . . . Since 1929

**DEPENDABLE**

**RUGGED**

**QUIET**



Note that the cap bearing has been removed to show the bronze bearing with ring oiler.

**Quiet As A Cat's Purr**

Introduced in 1929, the Unipack has since been giving satisfying service in thousands of homes. Nineteen years and still going strong—for today the ever present demand for this dependable blower with rugged construction and quieter operation continues. Proof enough, we think, of its preference. Better yet, find out for yourself how superior and satisfactory the Unipack really is—write us now.

▶▶▶▶ **American Machine Products Co.**  
MARSHALLTOWN, IOWA

mechanization in the sheet metal shop, both for more efficient and lower cost production and for a more accurately made product. Several examples were cited to prove the point that more rapid production at a much lower cost would be the result of an investment in additional machinery.

Another serious need in the industry, according to Mr. Ward, is complete information on the operation and maintenance of the metal working equipment that is to be found in the sheet metal shop. He said that the machinery manufacturers have been spending a great deal of money on research and improvement of their products but have been negligent in providing adequate operational data. It was his belief that any apprenticeship or training program in sheet metal work is incomplete that does not include up-to-date information about the operation and maintenance of modern sheet metal machinery.

### Panel Heating

Last speaker of the convention was Lorin G. Miller, dean of engineering, Michigan State College, Lansing, Michigan, and his topic was "Warm Air Panel Heating." Beginning with a simplified definition of comfort and its requirements, Dean Miller explained radiation and convection. After giving the theory behind radiant panel heating he analyzed its application to the residence. The ideal location for the radiant panel, he said, would be the exposed wall of the room, but this is seldom practical because of the space occupied by doors, windows, pictures, etc.

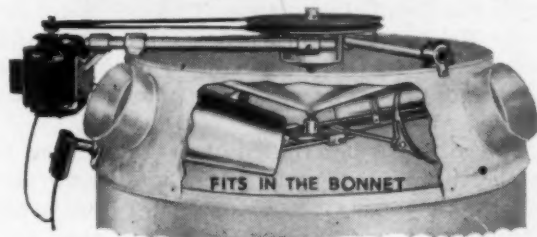
Dean Miller said that there had been many applications of warm panels to floors but that he felt there was frequently a question of too high a floor temperature resulting in foot discomfort. His conclusion then was that the logical place to put a radiant panel is the ceiling where there are few obstructions and the temperature can be safely carried at a higher level than the floor. He repeatedly emphasized that design of a panel heating system is not much more difficult than design of a conventional job but that heat losses must be calculated accurately. He said that the good old days are gone of putting a 9 x 12 register in a room because it has a 9 by 12 rug. All the calculations required in the design of the panel job must be made carefully and then the installation has to follow the design precisely, if the system is to operate efficiently.

While the speaker did not delve into the technicalities of design and installation too deeply, one point that he did bring out was that the air requirements of a panel system are so much higher than those of a conventional system that it is probable that the popular package unit warm air furnace will not be practical for panel heating. The question period following this talk brought out a number of ideas on the technical as well as the promotional aspects of panel heating.

The convention came to a close with the banquet Friday evening when the new officers were introduced and the outgoing president, Mr. Meggs, presented the continuing secretary, Frank Anderson, with a handsome wallet purchased by the board of directors as a sign of their esteem. They even christened the wallet with a pair of crisp \$100 bills. A fine floor show followed the dinner and the 31st convention was over.



**Now** you can offer **EVEN HEAT DISTRIBUTION**  
and **MAXIMUM FUEL EFFICIENCY** with  
**CIRCULATAIRE** The New Improved Booster Fan  
for **GRAVITY FURNACES**



INSTALLED IN ABOUT  
TWO HOURS WITHOUT  
REMOVING BONNET

No baffles required — No new furnace pipes — No changes in existing ductwork — No wiring. CIRCULATAIRE not only overcomes cold rooms but also permits Controlled Distribution of Heat to each room as desired.

Thousands of homes with cold rooms — attic flats and other additions need this Low Priced booster fan.

For literature and price information write —

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1001 S. KOSTNER AVE., CHICAGO 24, ILL.

#### SATISFIED CUSTOMER REPORTS

Mrs. W. H. S., Cicero, Illinois, recently converted the attic of her bungalow into an apartment and a heating problem developed; when the temperature downstairs was 76 degrees it was only 62 degrees upstairs. A "CIRCULATAIRE" was installed and now a balanced temperature of 72 degrees upstairs and down is easily maintained.

A COMPLETELY PACKAGED UNIT  
Nothing for the dealer to furnish except limited amount of labor.



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Is the quick, economical way to find what you're looking for. Check the classified page each and every issue for real bargains and hard to find items. It's a quick and sensible means too, of disposing of sheet metal tools, furnaces, anything else for which you no longer have use. Check the classified page for rates.

**WHITNEY-JENSEN PRODUCTS**  
38 YEARS EXPERIENCE

## WRITE FOR NEW CATALOG 16-49

Showing numerous time  
and labor-saving tools  
and machines.

**WHITNEY METAL TOOL COMPANY**  
91 FORBES ST. • ROCKFORD, ILL.

*Quick Selling!*

## BUDGET PACKAGE

A complete warm air heating package for small homes. Burner and all parts ready to install. Easy to service 85,000 B.T.U. unit shown. Other models up to 200,000 B.T.U. Highboy models also available.

Attractive dealer franchises open in selected territories. Write today and cash in on this "budget package" and a complete oil heating line.



Model  
85  
Warm Air  
Unit

**GENERAL**  
**Automatic**

2300 SINCLAIR LANE

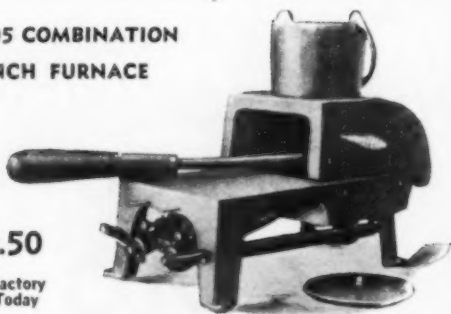
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## No. 105 COMBINATION BENCH FURNACE

**\$19.50**

F.O.B. Factory  
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### Highest Temperature Without Forced Air Blast

This fast, efficient JOHNSON Bench Furnace is used for both heating and melting. Designed for heating soldering coppers up to 12 pounds per pair. Also for heat treating, case hardening and tempering carbon steel tools. Two burners, each equipped with shut-off valve and pilot light deliver temperatures up to 1800° F. without a blower. Firebox 3¼ x 4½ x 5½, lined with firebrick. 3" cast iron melting pot sets in hood by removing lid. Melts lead, babbitt, tin, zinc. Capacity 10 lbs. A very economical and useful furnace for your shop.

Write for FREE Catalog of JOHNSON  
Bench and Soldering Furnaces,  
Torches and Blowers

**JOHNSON GAS APPLIANCE CO.**  
580 E AVENUE N.W. CEDAR RAPIDS, IOWA



## Dunwoody Teaches "How, What & Why"—

(From page 86)

size trunk line with seven take-offs, each different from the other. Drafting II and III give the student work in triangulation, the layout of fittings classed as irregular forms, layout of oval-to-round transitions, and many other points.

Two other units complete the work in the Warm Air Heating and Ventilating course. They are Sheet Metal Electric Welding I (Gas and Arc) and Miscellaneous Sheet Metal Work I, which helps the student review and put into further practice the skills learned during his period at the school.

Of necessity, the description of the courses has been kept short, but one who is experienced in air conditioning work can gather somewhat of the trend of the training.

In an article next month the work taught in the sheet metal department will be described. The same thorough training and desire to turn out a good workman is evident there as is evident throughout the rest of Dunwoody Industrial Institute.

## Liability Coverage—

(From page 74)

to decide. In any suit for damages which is filed, however, the usual custom is to name manufacturer, distributor, and retailer. Thus, at one fell swoop, all interested parties are brought into court. Even though you may not be held liable, even though the claim may be false or fraudulent, it will be necessary to defend your interests and the cost of defending such a suit, including investigation, medical examinations, appraisals, attorneys fees, release of attachment bonds, appeal bonds, expert witnesses and court costs often runs into many hundreds or thousands of dollars.

## Defense Is Difficult

Claims alleging injuries or damage from products or completed operations are particularly difficult to disprove. First, they occur away from your premises, after your workmen have completed their installation or repair work. In such cases, the only witnesses usually present at the time of the accident are the claimant, members of his family, and friends or neighbors. Witnesses on your behalf usually are limited to the workmen who performed the work and these may or may not be available when suit for damages is filed. If available they may or may not be able to recall the particular equipment or installation involved. Years may have passed since the job was done.

Probably the only other witnesses available would be heating engineers, and their testimony could only touch upon the general practices and methods of the trade, not the facts of the particular case involved. In the absence of written instructions, you or your workmen may give oral instructions. This is dangerous, as you may overlook a point that is obvious to you, but entirely unknown to the customer. There may also be a logical misunderstanding on the customer's part. In-



NEW DESIGN  
NEW FEATURES

## THE ECONOMY . . . FOOT POWER SHEAR

Capacity 36 to 52 inches. 18 ga. and lighter.

All steel welded construction, capacity to 18 ga. soft steel. Top knife bar strongly braced and provided with adjustable bronze gibs to compensate for wear. Blades of highest grade tool steel tempered and carefully ground to give maximum service before regrinding. Adjustable front and rear gauges, quickly set for different sizes. Spring actuated hold-down will clamp material firmly to the bed.

To Cut Material 36" Wide . . . \$225.00  
To Cut Material 42" Wide . . . \$300.00  
To Cut Material 52" Wide . . . \$375.00



All prices F.O.B. Chicago—Prompt Shipment

The New Economy 8' 16 gauge Hand Bending  
Brake Now Available for Prompt Shipment

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## Saves Time and Money!



TRI-SAW, the marvelous tool that rips through practically any kind of material up to 10 gauge metal is a great saver of TIME, MONEY, LABOR and MATERIALS!

Persons who do air-conditioning, warm air-heating and sheet metal jobs often tell us that TRI-SAW is indispensable.

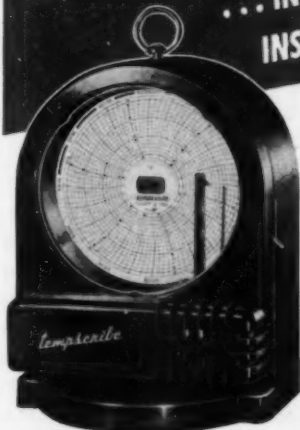
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## RCS Tool Sales Corporation

Chalstrom Building

Joliet, Illinois

## The *tempscribe* RECORDER ... INDISPENSABLE for SALES, INSTALLATION and SERVICE



- SHOWS NEED FOR REPAIRS OR MODERNIZATION OF HEATING INSTALLATIONS!
- DEMONSTRATES THE HEATING COMFORTS THAT WILL RESULT FROM THE RECOMMENDED IMPROVEMENTS!
- SETTLES COMPLAINTS DIPLOMATICALLY AND KEEPS YOUR CUSTOMERS SATISFIED!

The TEMPSCRIBE Temperature Recorder makes round-the-clock records that show highest and lowest temperature for 24 hours, temperature extremes, and frequency of temperature fluctuations. Compact, self-contained; no electrical connection, requires no watching.

The TEMPSCRIBE can save your time and money on service calls—and build your reputation for reliable, expert service.

Ask your jobber about TEMPSCRIBE  
Recorders, or write for Bulletin 704.

BACHARACH INDUSTRIAL INSTRUMENT CO.  
7000 BENNETT STREET, PITTSBURGH 8, PA.

### Also Available!

#### MOTOR OPERATION RECORDER

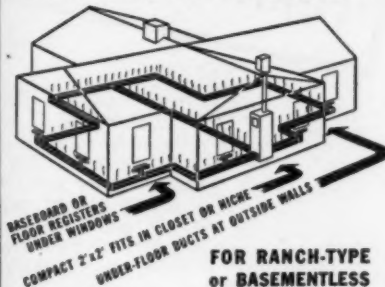
... records on-and-off periods showing cycling frequency, length of running time, and percentage of heating capacity utilized.

## RADIANT FLOOR PANEL HEATING *plus* FILTERED CIRCULATING WARM-AIR

*Both in one unit - At less than  
the cost of conventional heating!*



## The INTERNATIONAL WARM-AIR AUTOMATIC OIL or GAS FURNACE



BASEBOARD OR  
FLOOR REGISTERS  
UNDER WINDOWS  
COMPACT 2'x2' FITS IN CLOSET OR NICHE  
UNDER-FLOOR DUCTS AT OUTSIDE WALLS

FOR RANCH-TYPE  
or BASEMENTLESS  
HOMES...

A truly great advance in modern heating engineering—that really overcomes the basic problems of home heating. Under-floor ducts eliminate cold floors and chilly walls... Base register banishes cold air cascading down windows... Elimination of air stratification assures uniform temperatures at all levels. Low cost installation—economical operation.

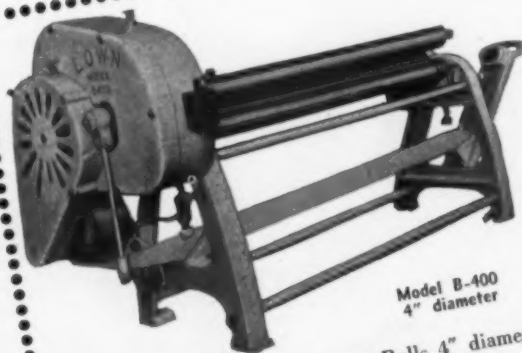
Send for literature giving details  
and typical layouts.

## INTERNATIONAL OIL BURNER CO.

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# LOWN SLIP ROLL FORMING MACHINES



Model B-400  
4" diameter

- Initial Type-Power Driven.
- Rolls 4" diameter.
- Oilite bearings - Alemite lubrication.
- New type quick acting latch on drop arm.
- Hand wheels on adjusting screws.
- Roll position indicators.
- Fast, sturdy and easy to operate.
- Prompt deliveries.
- Other size machines also available.

Write for Bulletins

**San Angelo Foundry & Machine Co.**

San Angelo, Texas . . . . . E. Upton & SFE Tracks  
Distributors in Most Principal Cities

## Sell 'Em, NOW!

### FURNACE REPAIR PARTS and FURNACE REPLACEMENTS

No need to tell you that repairing old furnaces is a lucrative source. You'll find many a worn out heating plant in your search for repair jobs and whether or not it can be fixed it'll still make extra money for you. We can supply all the repair parts you need and we're also set up to give quick service on new Waterman-Waterbury Furnaces, Blowers, Fittings, Registers, Incinerators, Water Heaters and many accessories.

Your orders will have our prompt attention.

**OMAHA STOVE REPAIR WORKS**

1206-S Douglas St.,  
Omaha 2, Neb.  
Since 1882



insurance companies writing this kind of insurance have had countrywide experience handling claims of this type, over a period of many years, and due to this past experience are able to conduct a thorough investigation, defend the suit, and settle claims promptly and to the satisfaction of all parties concerned.

### Trend of Awards

We are all aware of the fact that labor and material costs are at an all time high and still mounting higher. What we may not realize is that jury awards are keeping pace, and judgments of \$25,000 to \$50,000 are not uncommon. For this reason, it is important that adequate amounts of insurance be carried.

Of course, if you were held liable you could seek recompense from the manufacturer. This would mean that you first must settle the claim against you, then go to the expense and delay of pressing a claim against the manufacturer. When you carry insurance, the insurance company assumes the responsibility of handling all claims.

### Policy Form

You can decide yourself that this coverage is necessary, but of equal importance are the following points:

1. Does the policy you contemplate purchasing provide the broadest coverage available?
2. Is it written by a company with countrywide loss adjustment facilities?
3. Is the policy premium correct?

Since a borderline claim may involve either a claim under the basic liability policy, or the products and completed operations policy, it is best to carry all insurance in the same company to prevent the difficulty and delay resulting while the two companies decide which is to handle the claims.

The safest way to cover all insurable liability hazards is to purchase a comprehensive liability policy, written to include products and completed operations coverage.

The safe way to purchase this insurance is through the services of a competent agent who is acquainted with all the facts in your particular case.

### Wisconsin Convention—

(From page 115)

of the administration in Washington are carried out. He pointed out that several departments of the state of Wisconsin have asked for \$81 million more for the next two years than was appropriated for them during the last two. He also touched on the possible repeal of the Taft-Hartley law and the basing point decision as having deep significance for the sheet metal contractor.

Harry R. Eschenburg, Milwaukee, chairman of the trade relations committee reported on the functioning of that group. He spoke of the way in which these duties are carried out and told of the cooperation that has been achieved between the various segments of the industry. District meetings of the association have helped solve many local problems as they came up and the functioning of the committee has been assisted by this procedure.

Frank Kramer, Milwaukee, chairman of the apprenticeship committee, gave a report on the current number of apprentices in the state (524) and expressed the belief that there should be no slackening in the train-

# Reinhard's Air-Lock

## CONVERSION GAS BURNERS



The Reinhard "Air-Lock" principle causes the flame to spread and reach the sides of the fire-box quickly without the use of baffles, thus ensuring maximum fire travel and heating efficiency.

All valves and controls are under cover—nothing shows in the basement but the neat, attractive casing.

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Manufacturers' Agents  
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A few good territories  
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Quality Products for Over 45 Years  
Complete Line of Gas Conversion Burners  
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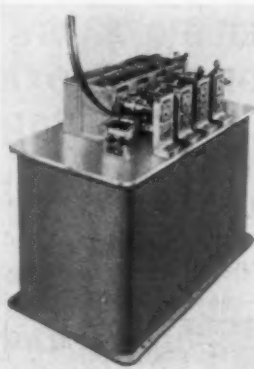
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Machine shown was chosen from our 8 standard sizes and specially tooled by us to form the cross-sectional contour and then into the ring in one pass . . . ring diameter is varied by simple screw adjustment.



This is just another example of the versatility of Dahlstrom Roll Forming Machines. They are competition eliminators sometimes producing in an hour what other methods require days to accomplish . . . and do it more accurately with practically no effort. If you have volume footage on any forming operation it will pay you to investigate the possibilities of roll forming . . . especially when you can look forward to production rates as high as 5000 feet per hours on Dahlstrom machines.

### Dahlstrom Machine Works, Inc.

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The  
**BEST CONTROL BUY**  
for  
INTERMITTENT OIL BURNERS

**MERCOID**  
AUTOMATIC CONTROLS INSURE  
FINE PERFORMANCE AND LONG LIFE

#### TYPE JMI MERCOID SAFETY AND IGNITION CONTROL

- "A"—Special high temperature bimetal assures constant sensitivity and long life.
- "B"—The differential adjustments permit adjusting in the field to meet variations and fluctuations in stack temperatures.
- "C"—Only three mercury switches used for motor, safety and ignition.
- "D"—The safety timing mechanism determines the time the burner can operate without flame. It is set at the factory, but may be changed when necessary. In case of a safety shut-down, turn hand reset button to resume operation.
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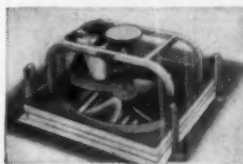
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YOU WILL PROFIT BY THESE EASY-TO-SELL, EASY-TO-INSTALL HOME FANS



#### TYPE EV

Popular spring mounted package unit for horizontal attic floor installation. Complete with all equipment and accessories for quick installation. 5 sizes 24" to 48", 4700 to 15000 CFM.



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Brand new spring mounted package unit for vertical attic installation. Easy to install with minimum building alteration. 9 models from 24" to 60", 5000 to 25000 CFM.

#### ALSO 4 NEW WINDOW FAN MODELS FOR QUICK "OVER-THE-COUNTER" SALES!

Sizes from 12" to 30"—single and variable speeds. Ideal for installation where permanent Comfort Coolers are less adaptable. 1000 to 8200 CFM.

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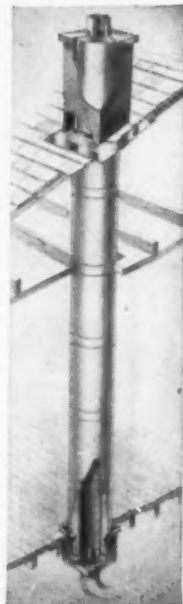
Furnished complete, ready for installation. **SAFEST** Chimney ever built. Underwriters' Lab. approved for extreme firing—FHA acceptance. All fuels—Light weight, needs no foundation. Suspends from ceiling or floor joists. A lifetime chimney—tile lined—insulated. Costs third to half less than brick. Easily installed, summer or winter, by anyone in 3 to 4 hours. Immediate delivery.

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Popular Price

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**UNION MANUFACTURING CO. INC.**

Boyetown, Pa.

ing program but that worthy prospects for the trade should be contacted at all times. Mr. Kramer, who is also chairman of the same committee of the national association, told of the work being done by the SMCNA in gathering material for an apprenticeship training course. In conclusion, the speaker warned his audience that an apprentice is costing them money and it is to their own advantage to see that the boy secures the proper training.

Arnold Holming, Milwaukee, chairman of the labor relations and policy committee discussed the contract of the Milwaukee local, a contract tied to the cost of living index, and the overtime on overtime problem that has been posed by a decision of the Supreme Court. He went on to speak of the part that labor unions are now playing in the field of national politics. He also ventured the opinion that the unions would find it hard to press for wage increases in the face of a tightening economy.

Last speaker on the Tuesday morning program was Walter Marth, Milwaukee, chairman of the warm air heating and air conditioning committee. Mr. Marth offered himself as a good example of the benefits of products liability insurance. He recently took out this type of coverage. Unfortunately, he did it after a suit had been filed against him, after one of his jobs became involved in a fire loss.

Tuesday afternoon, February 8, was devoted to a closed business meeting and the various items of association business that needed to be disposed of were handled. The election of officers also took place at this meeting.

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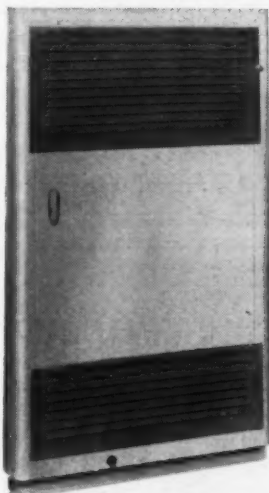
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for customers . . . cuts installation cost for YOU.

Sequoia's new 40,000 BTU Dual-Wall Furnace is designed for all homes, new or old . . . is especially ideal where floors cannot be cut and pits are impossible. Quickly installed, reasonably priced! Delivers heat from BOTH sides of wall. Takes up NO floor space. Fits within regular 2x4 studs and extends only 2½" from walls. Fully vented . . . A.G.A. approved for all gases. **HERE IS A PROFIT-BUILDING ADDITION TO YOUR LINE—Send for full information!**

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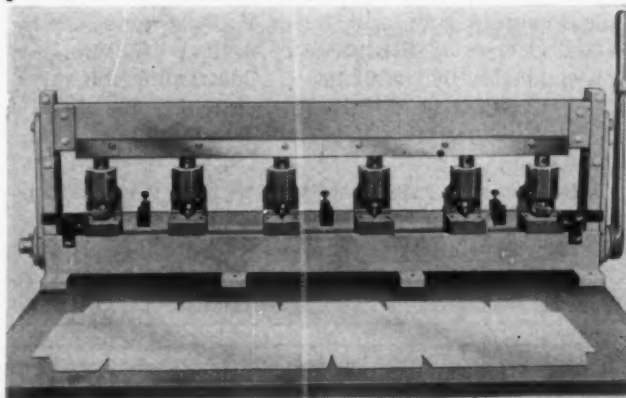
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Sheet Metal Craftsmen

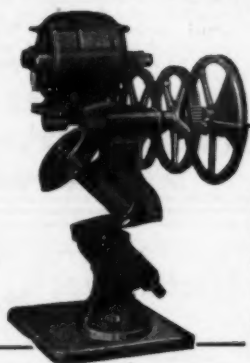


Sheet Metal Shop Operators will appreciate the cost-saving advantages of the new MULTI-NOTCHER which will neatly cut six accurately located notches with one pull of the handle in steel or aluminum sheet up to 20 gage in thickness. Layout operations are made easy by self-aligned dies which are readily moveable to the correct position according to the built-in scale. Standard Machines are available for 36-in. and 48-in. wide sheet; other models for sheet up to 120-in. wide. Dies are available for 30-deg. V-notches, square notches, Pittsburgh notches and others. For more information contact your distributor or write us.

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*See the KENT before you buy any Furnace Cleaner*

**THE KENT COMPANY, INC.**

435 Canal Street

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*Representatives in Principal Cities*

## 7th International Exposition—

(From page 120)

A report by William M. Myler, Jr., chief engineer of the Janitrol Division, Surface Combustion Corporation, Columbus, Ohio, and Harlan W. Nelson, supervisor, Battelle Memorial Institute, was based on an investigation conducted by the institute to determine the value of automatic air shutters on gas burners under operating conditions simulating those obtained in a home installation.

Data resulting from tests showed that thermal efficiency is increased when off-period air is controlled by an automatic shutter. However, the authors stated that a more important consideration is the magnitude of the increase in efficiency, and this is of concern pri-

marily as it affects seasonal operating cost. It was pointed out that normal variables which are beyond control and which also affect seasonal operating costs, are much greater in magnitude than the possible saving due to control of off-period air.

"It is, therefore, concluded that it cannot be proved on an actual installation that such control has any value to a customer," said the researchers. "Since it cannot be proved to a customer in his own home that the use of an automatic shutter will save him money, the logical conclusion is that it should be omitted, thus saving both the cost of the development and manufacture."

The last technical session on Wednesday concluded with a report by A. B. Algren, professor of heating, ventilating, and air conditioning at the University of

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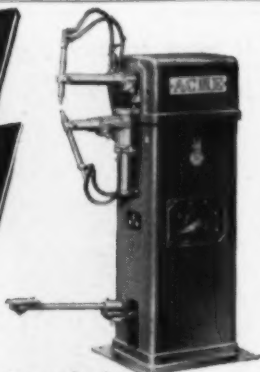
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"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

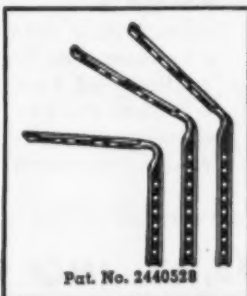
Write us about your problems. Send for Bulletin No. EX-41

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**No. 12 SHANK**  
**33 1/3% STRONGER**

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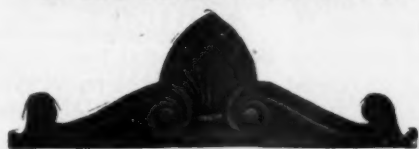
The high quality cement for setting up new furnaces and re-cementing old ones. Withstands higher temperatures. Will not crack, bloat, shrink or blister. Makes the job stay put. Packed in 5-lb. and 10-lb. cans.

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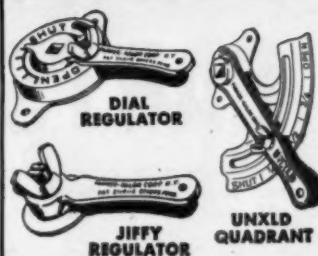
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ALSO: Complete line sheet metal hand tools

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## HEAT THAT COLD ROOM

This self-cooled booster fan will do the job better because it's ventilated. Oil only twice a year without removing the fan from warm air pipe. Long lasting, quiet, efficient, runs on house current, weighs only 1 1/2 lbs. Fits pipe sizes from 8" to 12", very simple to install. Can be operated with switch, automatic fan control or thermostat. Thousands now in use. Ask your jobber today or write us for prices. Insist on McLarty, the only ventilated booster fan on the market.



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Available  
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**CHENEY FLASHING**  
16 OZ.  
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## "CRARYS" RAIN WATER CUT OFFS

Made in all Standard  
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Plain Round and Cor-  
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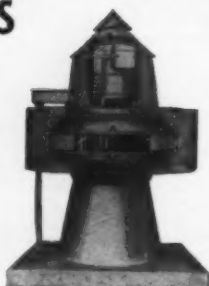
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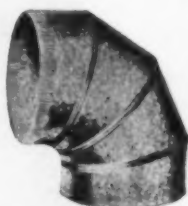
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also conductor pipe, eaves trough, drip edge, rake strip, etc.

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Minnesota, and Ben Ciscel, control system analyst of the Research Division, Minneapolis-Honeywell Regulator Company. In a paper entitled "Heating Panel Time Response Study," the authors reported their findings on a study of heat storage effects in an automatically controlled floor panel heating system.

The tests were conducted in a small, well insulated house without windows, and with only one door. The heating panel was a four-inch concrete slab laid on nine inches of crushed rock, with periphery insulation of rigid fiber board. During the tests, no ventilation was introduced. The tests indicated that the mean radiant temperature and the air temperature were generally within a degree of each other, even during large and sudden transient conditions.

The maximum air temperature rise rates were about eight degrees per hour and usually occurred about an hour after the heat input had been increased. The authors stated that floor coverings or a smaller heat input to the panel would further delay the rise of room air temperature.

A large difference between total heat stored in the panel and total heat supplied to the panel system indicated that the panel storage accounted for only a part of the total heat input. The house thermal load accounted for about 2,500 Btuh or a total of 25,000 Btuh over a 10 hour period. About 50,000 Btuh then remained to be accounted for by storage in the fill or structure, and by periphery losses. The need for insulation between the panel and rock fill, as a means of improving the temperature response of the panel, is therefore apparent, the authors said.

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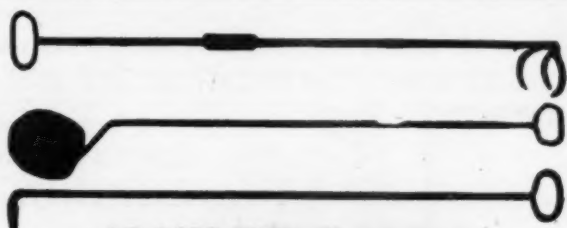
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Chisels, punches, drills, screw drivers, nippers and numerous other hand tools . . . quality built for long service. Sold by leading jobbers.



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**QUICK - THOROUGH** — Extra strong suction draws out soot and dirt in a steady stream into dust-tight oversize bag. Attachments supplied clean registers, radiators, air intakes, pipes, etc.

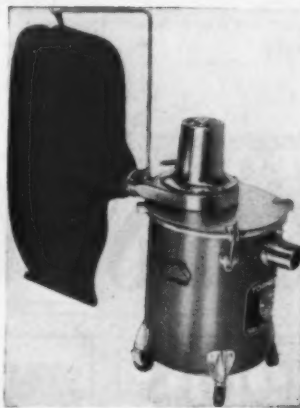
**EXTRA PROFITS** — Experience proves that furnace and boiler cleaning brings you the repair and service business.

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#### FREE TRIAL OFFER!

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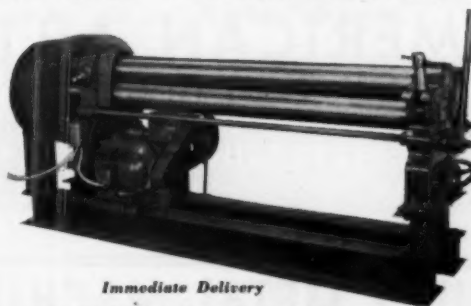
Stocked by leading jobbers everywhere.  
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SIZES  
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ROLLS  
UP TO  
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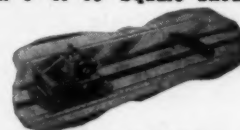
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6 NO. MICHIGAN AVE.,  
CHICAGO 2

## wanted

WANTED—Shearings any amount—all sizes. Galvanized, cold and hot rolled aluminum. Stainless and copper 6" minimum width to 36" minimum length, uniform quantities. Gauges from 16 to 30 inclusive.

Write or wire  
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901-903 East 9th Street  
Los Angeles 21, Calif.  
Trinity 4713

## for sale

FOR SALE—20 to 25 squares used Ludowici-Celadon Imperial Straight Barrel Mission Tiles 14 1/4" Long. Color Red. 10 to 12 squares Imperial Interlocking Shingle Tile 11" x 8 3/4", Color Green. Will make reasonable price on the whole lot. Write A. Elbling & Sons, Pontiac, Michigan.

FOR SALE—Sheet Metal Shop in Central Arizona—Health Center—15,000 population, altitude 5,000 feet—For information write Box 1627, Prescott, Arizona.

## situations open

Junior Research Engineer—Position open for a young, aggressive research engineer to assist in development of oil and gas furnaces. Experience secondary to creative ability, imagination and advancement potential. Future with this major manufacturer unlimited to right man. Address Key No. 753, American Artisan, 6 No. Michigan Ave., Chicago 2.

Wanted Sales Representative by a furnace manufacturer of gas fired forced air furnaces. No objection to handling limited number of related non-competitive lines. Submit full details and references. Address Key No. 755, American Artisan, 6 No. Michigan Ave., Chicago 2.

## lines wanted

Distributor—Omaha, Nebraska area. Wishes to establish new lines of Warm Air Heating. Would like very much to contact interested manufacturers. Parker Furnace Supplies, 2705 Leavenworth Street, Omaha, Nebraska.

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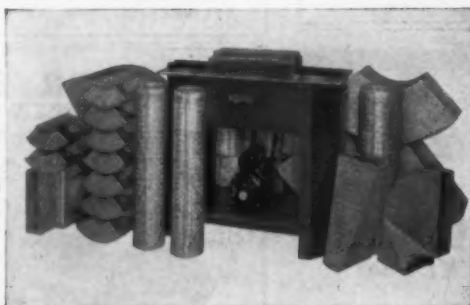
# AMERICAN ARTISAN SERVICE SECTION

## SHEET METAL MACHINES & TOOLS

### — LOCKFORMERS —

- AGE Soldering Torches - Pots & Tanks
- Steel Hand Brakes • Press Brakes
- "Rex" Spot Welders • "Pexto" Shears, Folders, Rolls, Rotary Machines, Etc.
- Whitney Tools & Machinery
- Marshalltown Throatless Shears
- Electric Shears, Drills • Shop Tools
- Smith Cleat Benders

Complete Line of Sheet Metal and Ventilating Supplies



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## CENTRAL-WEST MACHINERY CO.

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Haymarket 1-8361

CHICAGO 12, ILL.

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THOR TOOL & DIE CO.

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SLIP ROLLS—ROTARY MACHINES  
PITTSBURGH LOCK MACHINES  
SPOT WELDERS—ARC WELDERS  
POWER PRESSES—FOOT PRESSES  
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Write for stock list and prices  
and specify machines required

B. D. BROOKS CO., Inc.

Tel. HANcock 5326

361 ATLANTIC AVE. BOSTON 10, MASS.

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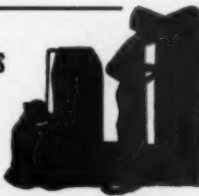


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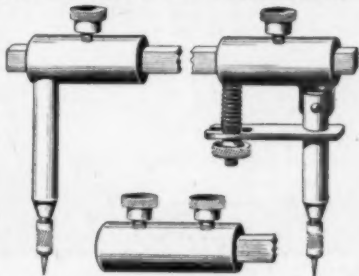
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## GRAND RAPIDS FURNACE CLEANERS

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CLEANER CO.  
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Grand Rapids 7, Mich



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Adjustable, Quick setting, "Hairline" accuracy, replaceable points. Scribes 3" to 84" circles. Complete as shown in durable screw cap container. Also manufacturers of other Metal Workers Tool Specialties.

Please state your Jobbers name when sending for literature.

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PROMOTE YOUR SALES?

TRY THIS SECTION  
FOR PROMPT REPLIES

YOU TOO CAN HELP  
through RED CROSS



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# METAL WORKING

# EQUIPMENT

BRAKES

SLIP ROLL FORMERS

FOR IMMEDIATE SHIPMENT

LOCKFORMER

SHEARS

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for expansion anchors . .

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Big Savings!  
Backward and Forward Curve—  
Exhaust and Pressure  
Axial Flow - Attic Fans - Roof Fans  
to 100,000 CFM

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- Makes Perfect Drive Cleats in Less Than 8 Seconds.



- The Only Machine That Does Both Operations.
- Standard Equipment in All Duct and Furnace Shops.

NO. 12  
Takes All Sizes Up to 12"

NO. 18  
Takes All Sizes Up to 18"

Write for More Information.

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# WHICH IS TRUE DIFFUSION?



**HONEYWELL REGISTER**

FACTORY SETTING—120°

**CONVENTIONAL REGISTER**

FACTORY SETTING—22°—22°

**JUDGE THESE FACTS** These actual unretouched photographs (except for blacking in the base and pointing up the registers) were taken under average room conditions.

**COMFORT** Disturbing air streams cause drafts and cold spots. A gentle, even blanket of air is distributed to every part of the room with Honeywell Air Diffusion Registers (see photograph at left) which assures "Comfort Unlimited."

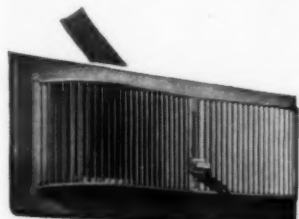
**CLEANLINESS** Wall and ceiling streaks cause countless numbers of complaints by home owners. They are eliminated with smooth, wide angle diffusion of the air within a room as shown in the photograph at the left of the Honeywell Air Diffusion Register.

**ECONOMY** Eliminate branch quadrants with Honeywell Air Diffusion Registers and save:

quadrant cost . . . .	20c
dampener cost . . . .	5c
shop labor (assembly)	50c
job labor (mounting).	50c

This saving will more than cover the slight extra cost of Honeywell Air Diffusion Register PLUS the added economy of one man, not two, for quick accurate balancing of the heating system.

**AVERAGE SAVING PER REGISTER** \$1.25



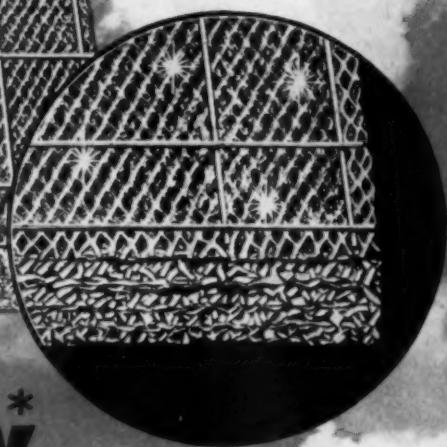
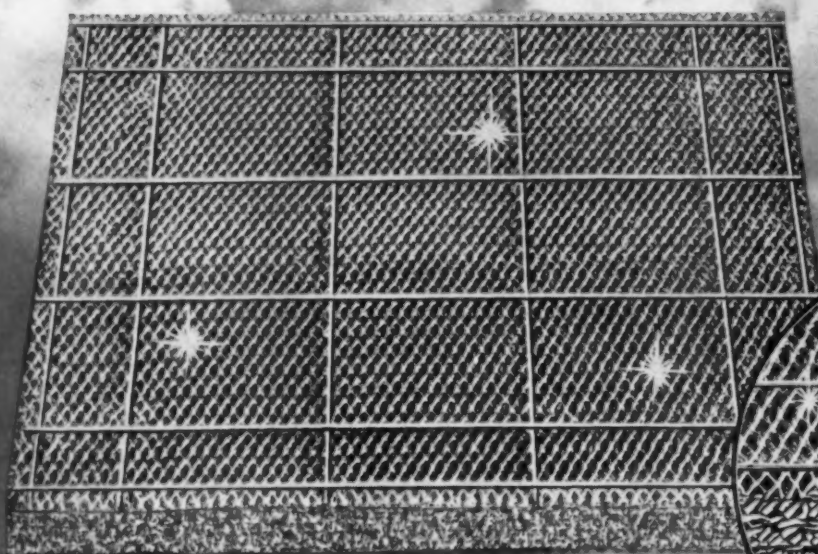
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WHICH TYPE REGISTER  
BOTH YOU AND YOUR  
CUSTOMERS PREFER

MINNEAPOLIS  
**Honeywell**  
CONTROL SYSTEMS



# **TWO Great <sup>RP</sup> Air Cleaning Developments**

**COMBINE IN THIS  
"WORLD'S FINEST AIR FILTER"**



## **New <sup>RP</sup> ALUMALLOY<sup>\*</sup> Self-Seal<sup>\*</sup> AIR FILTER**

"Self-Seal" edge prevents  
by-passing unfiltered air.

Here's your "quality filter of the year" . . . the new R-P ALUMALLOY Self-Seal Air Filter . . . combining two of the most important R-P achievements in modern air cleaning efficiency. It's designed exclusively for efficient dust-catching, and for long money-saving use in forced air furnaces, air conditioning, and ventilating systems.

You'll want to recommend the new R-P ALUMALLOY Self-Seal to your customers! Tell them how the frameless Self-Sealing edge prevents by-passing unfiltered air and offers extra

filtering surface to the extreme edge. Show them the unique "air-scrubbing" multi-layered baffle-pattern of lifetime ALUMALLOY filter-media that catches and holds more dirt, dust, soot and pollen with minimum air resistance. Then go on to prove by dollars and cents how quickly the rechargeable R-P ALUMALLOY Self-Seal pays for itself in lower air cleaning cost.

There's a great selling story in this new R-P ALUMALLOY Self-Seal Filter. Write for your copy of new Techni-Data sheet.

### **RESEARCH PRODUCTS CORPORATION**

Dept. A, Madison 10, Wisconsin

**<sup>RP</sup> FILTERS . . . for FINER LIVING**

**CHOSEN AS STANDARD EQUIPMENT BY LEADING MANUFACTURERS**

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